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**Sibling relations as mediator and moderator of parental hostility
and adolescent adjustment**

Conger, Katherine Jewsbury, Ph.D.

Iowa State University, 1993

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300 N. Zeeb Rd.
Ann Arbor, MI 48106

Sibling relations as mediator and
moderator of parental hostility and
adolescent adjustment

by

Katherine Jewsbury Conger

A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of the
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1993

Dedicated to the memory of
Deborah Ann Dale,
whose love and enthusiasm for her family,
friends, and work touched many lives
including mine

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CHAPTER ONE

INTRODUCTION

In everyday sibling ecology, brothers and sisters can make life easy or difficult for one another, they can be quiet, facilitative, sloppy and obstructive, or neat and cooperative. They teach each other skills Brothers and sisters can act as buffers for each other, interposing themselves between their siblings and the outside world. (Bank & Kahn (1975) in Schvaneveldt & Ihinger, 1979, p. 459)

Systematic research on the relationship between siblings is a recent development in the social sciences (Treffers, 1992). After decades of neglect, this lifelong relationship is being investigated by sociologists, psychologists, and anthropologists (e.g., Bedford & Gold, 1989; Lamb & Sutton-Smith, 1982; Zukow, 1989). There is mounting evidence that siblings play important roles in early (Dunn & Kendrick, 1982a; Dunn & Munn, 1986b; Lamb, 1978) and middle childhood (Bryant, 1982; Bryant & Crockenberg, 1980; Patterson, 1984, 1986), and in later life (Bedford & Gold, 1989; Cicirelli, 1982; Ross & Milgram, 1982). However, a large gap exists in the available knowledge on what happens to sibling relationships during the transition from early to late adolescence and on into young adulthood. "The question of how normative life transitions affect siblings' relationships is

an interesting one, on which we have, as yet, little systematic information " (Dunn, 1989, p. 3). Both prospective studies in childhood (e.g., Bryant, 1982; Buhrmester & Furman, 1990; Dunn, 1983) and retrospective studies in adulthood (Bank & Kahn, 1982; Cicirelli, 1980, 1982) point to the period bridging adolescence and young adulthood as one of great importance for both the nature of the relationship and the individual adjustment of the siblings.

Early adolescence, ages 10 - 14 years, may be a critical period for examining the influence of both parent-child and sibling relationships on individual adjustment (Dohrnbusch, Peterson, & Hetherington, 1991). Although no longer viewed as a period necessarily characterized by 'storm and stress' (Hall (1904) cited in Gecas & Seff, 1990; Steinberg & Silverberg, 1986), this period can be a stressful time for parents and children alike as they struggle with issues such as independence and autonomy, emerging sexuality, and dating relationships (Bryant, 1982; Simmons & Blyth, 1987). Parents who create a hostile family environment during this period may put a young adolescent at increased risk for developing adjustment problems (Patterson, 1982; Rohner, 1986; Rutter, 1980, 1990; Simons, Conger, & Whitbeck, 1988). Siblings who emulate their parents' hostile behaviors may put the adolescent at even greater risk for developing and maintaining a hostile, interactional style (Patterson, 1984, 1986). On

the other hand, if the sibling relationship is a source of support it may diminish or buffer the negative effect of parents' hostility (Bank and Kahn, 1982b; Bryant, 1982; Werner & Smith, 1982).

Evidence is accumulating that conflict between siblings may be a particularly important feature of the relationship to consider (e.g., Brody, Stoneman, McCoy, & Forehand, 1992; Munn & Dunn, 1988). Patterns of friendliness and aggression appear fairly early in the sibling relationship and seem to be stable into the early elementary grades (Bryant, 1982; Stillwell & Dunn, 1985). As yet, there is little information about how the sibling relationship changes during the years of adolescence. Allan (1977) suggests that patterns of interactions are 'cemented' during adolescence and this has implications for relations in later years. Although adult siblings report a decline in conflict and rivalry and increasing closeness as they grow older (see Cicirelli, 1982; Gold, 1989; Ross & Milgram, 1982); "we still know almost nothing about the trajectories of those relationships across the life course or how they change in later life" (Gold, p. 19, 1989).

In our eagerness to understand more about the significance of sibling relationships, we must remember to examine these relationships in the context of other family relationships. Dunn (1983) cautions us not to look at sibling

relationships in 'seeming isolation', as many mother-child studies were presented, but include the significant influence of other family relationships. Similarly, Bronfenbrenner (1986) notes that the family is the most 'immediate ecological environment' of the young adolescent and should be considered when investigating adolescent developmental relationships. Minuchin (1988) states that the information about family processes and relationships is incomplete "if we do not study the patterns of the family as a whole" (p. 16). Heeding this advice, the current study investigates sibling relationships and adolescent adjustment in the context of other family relationships.

Research by Christensen and Margolin (1988) and Patterson (1984, 1986) suggests that the sibling relationship may be an important factor which may help explain the spread or containment of hostility within the family. Research on relationships within families suggests that hostility that occurs within the family system, such as parental conflict, may spillover into other family sub-systems, such as the sibling sub-system (e.g., Brody, Stoneman, McCoy, & Forehand, 1992). Patterson (1984) reports that siblings even may serve as trainers for a hostile, antisocial interactional style which may put a young adolescent at increased risk for developing adjustment problems. However, Werner & Smith (1982) suggest that siblings as caretakers, often older

sisters, may be a protective factor for children during times of family distress.

Following the models of Christensen and Margolin (1988), Patterson (1982), and Simons, Whitbeck, Conger, & Melby (1990), this study employs a social learning perspective to extend previous models of family relationships and adolescent adjustment by including the sibling relationship. Using information from multiple sources; a) the seventh-grade target child, b) an older sibling (within four years of age), and c) observer ratings of family interactions; the study addresses three primary questions. First, it examines the direct effect of mother's and father's hostility on adolescent adjustment. Second, it investigates the transmission of conflict across family sub-systems, in this case parent-child and child-sibling. Finally it investigates the modifying influence of the relationship between siblings on the association between parental hostility and externalized and internalized emotional distress of young adolescents.

Organization of the Study

Chapter one provides a brief statement of the problem, rationale for the study, and a brief description of the organization of the study. Chapter two reviews the relevant research and describes the conceptual model. The sample, data collection procedures, and the measures used for the analyses are presented in chapter three. All measures used in the

analyses are included in a set of appendices. Chapter four presents the research results. The discussion of results and conclusions plus implications for future research in the area are found in chapter five.

CHAPTER TWO

REVIEW OF THE LITERATURE

Overview

The importance of the sibling dyad in the context of other family relationships is illustrated in research by Christensen and Margolin (1988) on conflict and alliance within families as well as by Patterson's studies of antisocial boys, their siblings, and their families (1984, 1986). Their work indicates that the sibling relationship may be an important factor which may help explain the spread or containment of conflict within the family. Through the mechanisms of modeling and imitation found in social learning theory, both studies suggest that hostile, aggressive behaviors by parents may foster similar behaviors in their children which may lead to problematic adjustment (Christensen & Margolin, 1988; Patterson, 1982, 1984). Moreover, Whitbeck, Simons, Conger, Lorenz, Huck, & Elder (1991) also suggest that conflict within the family system, such as that between siblings, may have a deleterious effect on a young adolescent's feelings about him or herself.

An alternative model, suggested by Bank and Kahn's (1982b) clinical work, proposes that siblings may turn to one another for 'solace and support' in the face of parental dysfunction or absence. Longitudinal research by Werner and Smith (1982) suggests that siblings as caretakers, often older

sisters, may be a protective factor for children during times of family distress. This study extends previous models of family relationships and adolescent adjustment (e.g., Bandura, 1973; Patterson, 1982; Rutter, 1990; Simons, Whitbeck, Conger, & Melby, 1990) by examining the sibling relationship and its role as a mediator and moderator of the relationship between hostile parenting behaviors and adolescent adjustment in the context of the family. The following review of literature focuses on three primary areas: (a) sibling relationships across the lifespan, (b) family relationships during early adolescence, and (c) the conceptual model used as the theoretical framework for examining sibling relationships in the family context.

Sibling Relationships Across the Lifespan

Research on the sibling dyad across the lifespan ranges from studies of sibling relationships during infancy and early childhood (e.g., Dunn & Kendrick, 1980, 1982b; Lamb, 1978) to middle childhood relationships (e.g., Brody, Stoneman, MacKinnon, & MacKinnon, 1985; Bryant & Crockenberg, 1980), and retrospective reports from adult siblings such as those reported by Cicirelli (1977, 1982) and Ross and Milgram (1982). However, research on adolescent sibling relationships is still rare, exceptions being new programs of research being developed by Brody and Stoneman (e.g., 1985, 1987, 1992) and D. Reiss and others (personal communication, 1992).

Early research on siblings often focused on ordinal position and age spacing, commonly referred to as birth order research, of siblings within the family (see reviews by Adams, 1972; Kammeyer, 1967; Wagner, Schubert, & Schubert, 1979). Some researchers feel this research has been quite valuable while others question its validity and utility (e.g. Furman & Buhrmester, 1985). Wagner, Schubert, and Schubert (1979) voice their support for this type of research in introductory comments to their review of approximately 2,000 studies that included basic information on sibling status (i.e., ordinal position, age spacing of siblings, and sibship size) as predictors of academic performance, intelligence, personality, and health, just to name a few. Their introduction states:

The study of the effects of sibship variables on child development resulted in findings vital to family and population planning and to child rearing, education, and therapy. For example, knowing that the only child usually develops superior intellect, social success, self-esteem, and responsibility can free couples to have an only child by choice" (Wagner, Schubert, & Schubert, 1979, p.58).

In contrast, Schvaneveldt and Ihinger (1979) cited many of the same studies and concluded that birth order research was flawed in many ways (e.g., small, unrepresentative samples, measurement problems, and questionable interpretation); "birth order is at best a proxy or indicator for something that is going on in the family" (p.454). Furman and Buhrmester (1985) state that "research on the effects of structural variables

and research on the qualities of sibling relationships are not one and the same" (p. 448). Importantly, birth order research does not provide information about the relationship between siblings. Irish (1964) issued a challenge to family researchers to study sibling relationships as an important source of information about family relationships and individual development. This call basically went unanswered until Lamb (1978) and Dunn and Kendrick (1979) began to systematically examine this neglected family relationship.

Sibling Relationships in Childhood

Research on sibling relationships has focused on a wide variety of topics such as sibling rivalry (Levy, 1937; Pfouts, 1976), qualities of the relationship (Furman and Buhrmester, 1985), social comparison processes (Bryant & Crockenberg, 1980), power and status (Bigner, 1974; Buhrmester & Furman, 1990), caretaking (Bryant, 1982; Weisner & Gallimore, 1977), and social support (Bank & Kahn, 1982; Bedford, 1989). Some of the earliest research on sibling relationships (e.g., Levy, 1937) focused on the rivalry and resentment assumed to emerge in the firstborn at the birth of the second child. Closer examination of the developing relationship between very young children revealed that the situation is much more complex (e.g., Dunn & Kendrick, 1979, 1980; Lamb, 1978). Studies of sibling relationships during infancy and early childhood found that patterns of aggression and friendliness between young

siblings are established soon after the arrival of the secondborn (Dunn and Kendrick 1979, 1982b) and persist through early childhood into the elementary years, up to about age 8 years (Stillwell and Dunn, 1985).

Conflict, in various forms such as rivalry, competition, power, and coercion, appears frequently in the literature on sibling relationships as a variable of interest. Dunn and Kendrick (1982a) reported that while the frequency of conflict may be high, it is most often found in the context of fairly positive interactions. Dunn and Munn (1985) reported that younger siblings learn how to negotiate family conflict situations through a combination of observation and participation. Furthermore, Dunn and Kendrick (1979) reported that older siblings, both brothers and sisters, are powerful models for infants in family interactions. Dunn and Kendrick (1981), reporting on preschool-aged sibling pairs, found a higher rate of positive interactions in same-sex sibling pairs and a higher rate of negative interactions among different sex pairs. Brody et al. (1992) found that conflict was more likely if one of the siblings was a boy regardless of the gender composition of the dyad.

Parents may influence the frequency of conflict and the nature of sibling interactions with their own behavior toward the children as a dyad and as individuals (e.g., Dunn & Munn, 1986a; Felson & Russo, 1988). Although the majority of

research to date has focused on the mother's influence on the sibling relationship; there is increasing recognition of the importance of including the unique contribution of fathers as well in research on family interactions (Almeida & Galambos, 1991; Simons, Beaman, Conger, & Chao, 1992; Simons, Whitbeck, Conger, & Melby, 1990; Simons, Whitbeck, Conger, & Wu, 1991).

Mothers who interfered unnecessarily in sibling interactions discouraged prosocial dyadic interactions but her lack of response to requests for help resulted in an increase in antisocial behavior (Bryant & Crockenberg, 1980). Felson and Russo (1988) found that mothers who intervened in conflicts on the side of the younger sibling actually promoted more aggression than when siblings had to handle their own manageable problems. Munn and Dunn (1988) reported similar findings where younger siblings learn to elicit mother's intervention and protection when conflict occurred. Similarly, Brody, Stoneman, McCoy, & Forehand (1992) reported that conflict within the family system, particularly conflict between parents, is associated with an increase in conflict between siblings, especially if one of the siblings is a boy.

While many researchers and lay persons alike view conflict between siblings as 'normal' behavior, for some sibling pairs hostile, aggressive behaviors may escalate into abusive behaviors. Straus, Gelles, & Steinmetz (1980) reported that sibling abuse occurred in over half of the

families studied in their nationally representative sample. These results suggest that conflict among siblings is an important factor to consider and that parents' behavior towards their children may have a great deal to do with the frequency and magnitude of the conflict (e.g., Felson & Russo, 1988; Patterson, 1984, 1986).

Adolescent Siblings

Few studies to date have closely examined the nature and functions of sibling relationships during adolescence. Goetting (1986) stated that the sibling relationship may be more intense during late childhood and adolescence because the siblings are in daily contact and share (and compete for) common resources including parents' attention. Lamb (1982) observed that "that siblings commonly become primary confidants and sources of emotional support in preadolescence, and these mutually important relationships usually persist well into adolescence and young adulthood" (p.5). Irish (1964) proposed that sibling interaction effects may be greatest during the teenage and 'launching' years. Two studies that have focused on this age group find that a relationship with an older sibling may have important consequences for younger children. Daniels, Dunn, Furstenberg, and Plomin (1985) reported that an older sibling who acts as teacher and caregiver may provide important support to a younger sibling. Werner and Smith (1982, 1992),

in their longitudinal studies of children at risk in Hawaii, found that an older sibling may act as an important source of support for a younger child and also may serve as a buffer against stressors affecting the family. Older siblings who are successful themselves in coping with stressful circumstances may serve as positive role models for children who are at risk for developing adjustment problems. In general, older siblings were more likely to set the tone of interactions thereby serving as models for either aggression or friendliness (Daniels et al., 1985; Stillwell & Dunn, 1985).

Adult Sibling Relationships

Research with adult siblings has shown that most siblings feel close or very close to at least one of their brothers or sisters (Cicirelli, 1982a). Emotional attachment in sibling relationships generally is found for both older and younger siblings of either sex (Cicirelli, 1980), although Adams (1968) reported the strongest ties among pairs of sisters. Feelings of closeness to siblings were reported by college-aged adults (Cicirelli, 1980), adults with spouse and children gone (Cumming and Schneider, 1961) and among the elderly (Cicirelli, 1977). Cicirelli (1982) reported that sisters were named more often than brothers when asked about "closest" sibling.

Adult siblings also reported that while most of them felt close to at least one sibling (Cicirelli, 1982), established patterns of interaction often perpetuated feelings of rivalry well into old age (Ross and Milgram, 1982). Although a great deal has been written about sibling rivalry (see Adler, 1959; Adams, 1968; Bank and Kahn, 1980; Levy, 1937; Sutton-Smith and Rosenberg, 1970), for the majority of siblings these feelings appear to peak sometime in adolescence and early adulthood. Allan (1977) argued that sibling rivalry appears to dissipate as people get older but might reappear if siblings are forced to live or work in close proximity. Ross and Milgram (1982) reported active rivalry in adulthood is usually perpetuated by long standing family interaction patterns. One dimension of rivalry, that of overt hostility or conflict, may be particularly damaging to the long-term sibling relationship. Patterns of closeness and conflict that emerge or are strengthened during adolescence may influence the patterns of interactions between siblings in later years.

In summary, we see patterns of sibling interaction being established at a very young age (Dunn and Kendrick, 1979, 1981, 1982a), carried through early childhood (Dunn, 1983), reinforced by patterns of parenting behavior in early childhood and middle childhood (Abramovitch, Pepler & Corter, 1982; Brody et al., 1985; Bryant and Crockenberg, 1980; Dunn and Kendrick, 1982b; Felson and Russo, 1988; Volling and

Belsky, 1992). However we still know very little about how interactions between siblings change or stabilize during early adolescence and the impact this relationship has on individual adjustment.

Family Relationships During Early Adolescence

Research on family relationships has traditionally focused on the marital relationship (Berado, 1980, 1990; Glenn, 1990) , the parent-child relationship (Dunn, 1983; Maccoby & Martin, 1983; Peterson & Rollins, 1987; Rollins & Thomas, 1979), or some combination of these two family sub-systems (Sussman & Steinmetz, 1983). The absence of research on sibling relationships is notable. Although siblings are often mentioned as agents of socialization (e.g., Gecas, 1981; Gecas & Seff, 1990), rarely are they included in investigations of socialization processes within the family context. It is well documented that parents have a strong influence on their children and their development. However most of the socialization studies have focused primarily on infancy and early childhood (see Maccoby & Martin, 1983; Peterson & Rollins, 1987; Rollins & Thomas, 1979). Schavaneveldt and Ihinger (1979) cite Irish (1964) and suggest that this focus on the early years overlooks the teenage and 'launching' years where parents (and siblings) may have their greatest impact. As more studies have investigated socialization processes in adolescence, it is increasingly

apparent that parents are not supplanted by peers but remain an important influence in their children's lives (e.g. Gecas & Seff, 1990; Simmons & Blyth, 1987). Youniss and Smollar (1985) have suggested that parent-child relationships are 'transformed', rather than severed, during adolescence. Indeed, the adolescent years, ages 11 to 20, may be a particularly fruitful time to investigate family relationships.

Early adolescence. Early adolescence may be a particularly critical period in children's lives. It is a time characterized by many physical, social, emotional, and cognitive changes (Peterson & Taylor, 1980; Simmons & Blyth, 1987). All too often adolescence is viewed as a single developmental period that stretches across the entire second decade of life. Brooks-Gunn and Peterson (1984) have criticized the developmental literature for its failure to distinguish early adolescence as a separate and important developmental period. As more research is done in this area, there is increasing recognition that this large period of life may be better addressed as three distinct stages of adolescence: 1) early, ages 10 to 14, 2) middle, ages 15 to 17, and 3) late, 18 to 22 years (Dohrnbusch, Peterson, & Hetherington, 1991). Early adolescents may be at increased risk for experiencing problematic adjustment if their parents are hostile and rejecting (Rohner, 1986; Simons, Conger, &

Whitbeck, 1988). Although no longer viewed as necessarily a time of 'storm and stress' (Hall, 1904, cited in Gecas, 1981), adolescence is a time of critical biological, social, and cognitive changes. Early adolescence, ages 10 to 14, may be a particularly crucial period in the lifespan to study the effects of parent-child relationships due to the numerous changes occurring during this stage. Some of the changes that may occur during this stage are physical changes due to puberty (Richards, Abell, & Peterson, 1991), changing perceptions of self and family relationships (Simmons & Blyth, 1987; Whitbeck et al., 1991), new school settings and friendship groups (Simmons & Blyth, 1987; Steinberg, 1987), increasing awareness of gender-typed behaviors and peer pressure (Bush & Simmons, 1981; Hill & Lynch, 1983), and a shift toward friends away from parents (Larson & Richards, 1991). Young adolescents desire autonomy yet want support and guidance (Richards & Duckett, 1991). Children who are negotiating multiple changes (e.g., entering puberty and junior high) need a supportive home environment to which they can return for advice and comfort. Rathunde and Csikszentmihalyi (1991) state that " . . . 'teens who maintain some reliance on parents can reap the benefits of extended periods of challenge seeking and exploration, which presumably are necessary for development and growth" (p.145). Similarly, Simmons and Blyth (1987) propose the concept of an 'arena of

comfort' that children need to retreat to when they need a respite from negotiating the complex demands of early adolescence. An 'arena of comfort' may include a supportive parent (i.e., family environment) or an area of security (e.g., stable group of friends) which children can maintain throughout their transition into new areas related to the changes of adolescence. Rutter (1990) states that a good relationship with at least one parent may act as a protective factor for children against the development of psychopathology. If young adolescents do not have a secure base from which to operate, they may be greater risk for experiencing problematic adjustment during this period of change in their life.

Parental behavior. Parents who are hostile, rejecting, and inconsistent in their behavior toward their children increase the risk of adjustment problems for their children (Patterson, Reid, & Dishion, 1992; Rohner, 1986; Simons et al., 1990). Parents who are preoccupied with their own worries such as financial matters or marital conflict, have less time and energy to respond to their children in a warm, supportive manner (Conger, Conger, Elder, Lorenz, Simons, & Whitbeck, 1992; Whitbeck et al, 1991). The effects on children's lives are seen in declining academic performance, poor emotional adjustment, hostile interactional style, and diminished

feelings of self-worth and mastery (Conger et al., 1992; Rutter, 1990; Whitbeck, 1987; Whitbeck et al., 1991).

Given these findings, one might reasonably expect that the outlook is fairly bleak for children living in hostile non-supportive family environments. However, some children do quite well in spite of family conflict and parental rejection. Research on resilient children (Garmezy, 1983; Garmezy and Rutter, 1985; Masten and Garmezy, 1985; Werner and Smith, 1982) suggests three broad sets of variables that act as protective factors: a) personal characteristics, b) positive family environment, and c) external systems of support. This study focuses on the second factor, family environment, and an often overlooked potential source of support for children, the sibling relationship.

Sibling support. Although hostile parental behavior may foster a negative family environment Patterson (1975, 1982; Simons et al., 1990); a highly satisfactory, supportive sibling relationship may diminish or buffer the negative effects on the adolescent. Bank and Kahn (1982) suggested that siblings may turn to each other as a source of "support and solace" (p. 217) under conditions of severe family stress or parental dysfunction. Work by Brody et al. (1985) also suggested siblings may form important supportive alliances during stressful times. Werner and Smith (1982) found that the availability of an older sibling who could provide warmth

and support protected a child from the full adverse effects of stressful family times. In particular, an older sibling might be especially likely to have the experience and personal resources necessary to shield a younger sibling from the full impact of parents' hostile, rejecting behaviors. Older siblings also could provide needed emotional support when parents were too preoccupied with their own worries to provide adequate positive parenting behaviors (Werner and Smith, 1982).

Sibling hostility. Although supportive sibling behaviors may reduce the adverse influence of parental hostility or rejection on adolescent adjustment, hostile sibling behaviors may exacerbate or amplify the negative impact of disrupted parenting (cf. Patterson, 1984, 1986). Patterson (1986) has shown that a child living in a hostile family environment may learn hostile, antisocial behavior patterns through interaction with siblings as well as parents; "mothers and siblings of identified problem children are caught up in - indeed, they contribute directly to - the coercive process that provides training for the socially aggressive individual" (p. 259). This suggests that some adolescents may be the victim of both aversive parenting and a hostile or insensitive sibling.

The task then requires that a hypothesized model of sibling relationship effects must include the possible stress-

buffering effects of a warm, supportive sibling relationship as well as the possibility that a hostile or strained sibling relationship will interact with hostile parenting behaviors to amplify the risk of problematic development.

Using these findings as well as concepts from family systems theory (Minuchin, 1988) and social learning theory (Bandura, 1973, 1977) as heuristic devices, the current study investigated the influence of relationships on relationships across the parent - child and sibling sub-systems and, in turn, their influence on adolescent adjustment. The inclusion of siblings is supported by recent research on sibling relationships as well as two important considerations suggested by Minuchin (1988) in her summary of a systems perspective on research on family relationships. First, Minuchin stated that the information about family processes and relationships is incomplete "if we do not study the patterns of the family as a whole" (p.16). Furthermore, the researcher should include sibling information even if the study is focused on a specific child within the family structure: " data on all parent - child subsystems in the family would be germane, even though the study is focused on a particular child" (Minuchin, 1988, p. 14). The inclusion of a sibling from each family in the current study provides a more complete picture of family members than is usually available

in studies that ignore the potential significance of a focal child's brothers or sisters.

The Conceptual Model

Drawing on the empirical evidence reviewed here, the hypothesized relationships among the concepts of interest are summarized in the conceptual model shown in Figure 1. This model is designed to address three primary questions regarding the role of parents' hostility and sibling relationships in explaining adolescent adjustment. The first question examines the direct effect of mother's and father's hostility on adolescent adjustment. The transmission of hostility from one family sub-system (parent-child) to another (child-sibling) is examined in the second question. The third question examines the role of the sibling relationship as a moderator, either amplifier or buffer, of the relationship between parental hostility and adolescent adjustment.

There is ample evidence to support the underlying hypothesis of the model, represented by Path A, which states: Parents' hostility has a significant positive association with adolescent adjustment problems (e.g., Bandura, 1973; Patterson, 1982, 1986; Rohner, 1986; Rutter, 1990; Simons, Conger, & Whitbeck, 1988). Although there may be many reasons why parents behave in a hostile manner (e.g., financial worries, marital conflict, health problems, work conflicts),

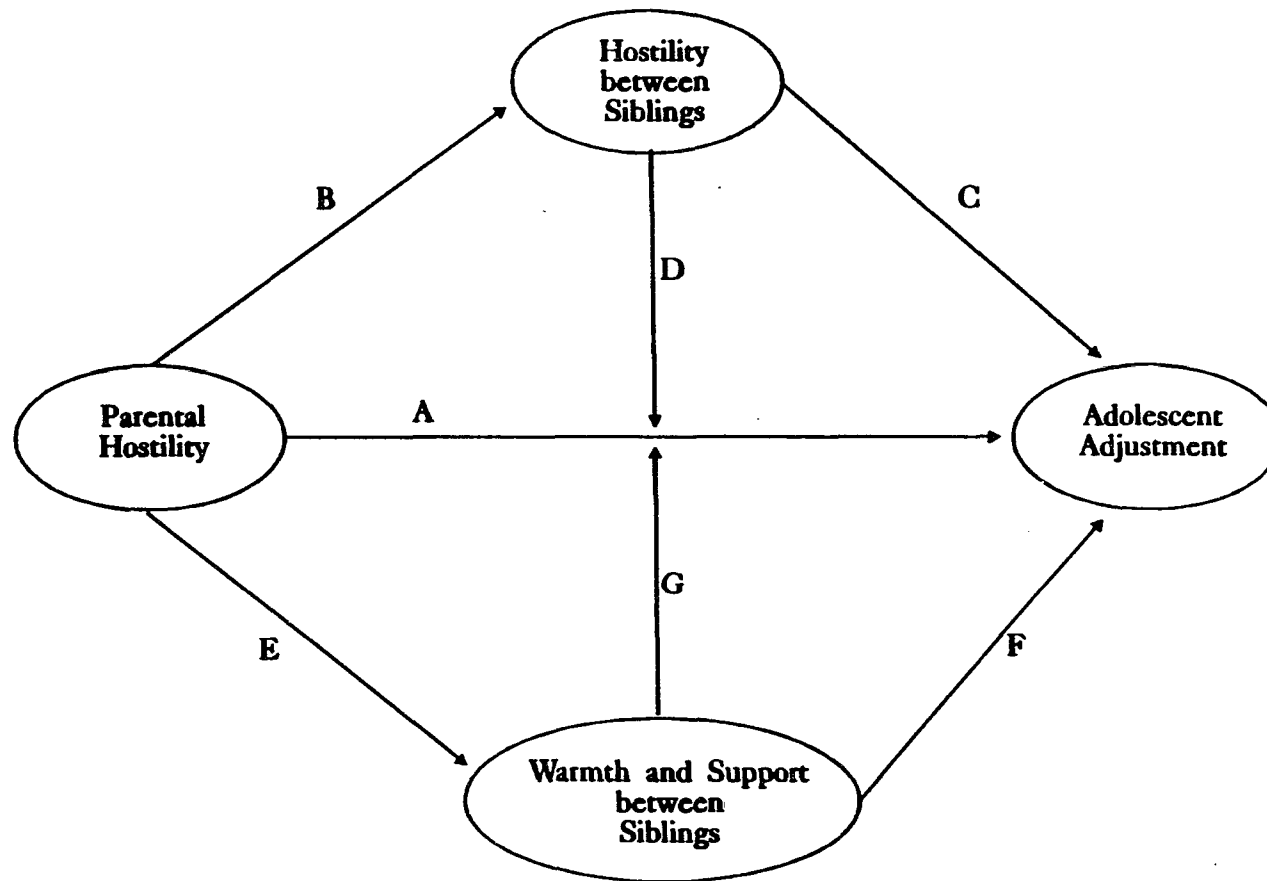


Figure 1. The conceptual model.

this study does not attempt to determine the underlying causes of hostility.

As have other investigators (cf., Patterson, 1984), the model proposes that hostile and coercive behaviors by parents play a key role in intensifying similar actions by siblings, to the detriment of that family subsystem. The second hypothesis, Path B, hostile behaviors by mother and father will be positively associated with hostile, conflictual interactions between siblings, is consistent with findings reported by Hetherington (1988). The critical outcome of hostility between siblings is the development of hostile, antisocial behavior patterns. Patterson's (1984, 1986) work supports this postulated causal process. For example, he found that antisocial boys trained other siblings in the family to engage in coercive interaction chains. Consequently, the model proposes that hostile behavior in the sibling dyad will be positively associated with antisocial, hostile feelings and behaviors by the seventh grader (Path C). It is also expected that hostile exchanges with a sibling may be associated with a diminished sense of self or problems of internalization (cf, Whitbeck et al., 1991). Angry, derogating behaviors by a sibling suggest to the recipient that he or she is of little value.

In addition, the level of hostility in the sibling dyad may moderate (i.e., interact with) the negative consequences

of parental hostile behaviors for both the seventh graders' externalized and internalized distress. Path D along with Path A represent this hypothesized relationship (i.e., the amplification model) as follows: The strength of the relationship between parental hostility and adolescent adjustment problems is contingent on the level of hostility in the sibling relationship. This first set of relationships, Paths A, B, C, & D, represents the transmission of conflict model under a set of specified conditions.

The second set of relationships, Paths A, E, F, & G, examines the possible stress-buffering influence of supportive relations between siblings as suggested by research by Cohen and Wills (1985), Werner and Smith (1982), and Wheaton (1985). Warmth and support in the sibling relationship is viewed as a source of support or a coping resource which may operate as an intervening variable or a moderating variable in the relationship between parents' hostility and adolescent adjustment problems. Path A, stated above, remains the primary relationship which is either mediated or moderated by warmth and support in the sibling relationship.

The mediational model where the direct effect of parents' hostility on adolescent adjustment is mediated by warmth and support between siblings is represented by paths A, E, and F. The hypothesis represented by Path E states: Parental hostility has a significant negative effect on the warmth and

support in the sibling relationship. Path F hypothesizes that warmth and support between siblings decreases the risk of adolescent adjustment problems.

The moderator model, or stress-buffering model, is hypothesized as an interaction effect between the stressor (parental hostility) and the support mechanism (sibling warmth and support) (Wheaton, 1985). The stress buffering model proposes that a high level of support in a relationship with an older sibling may act as buffer for the adolescent against the negative consequences of hostile behaviors by his or her parents. The hypothesized relationship represented by Path A and Path G is: The strength of the relationship between parental hostility and adolescent adjustment problems is contingent upon the level of warmth and support in the sibling relationship. This is consistent with Bank and Kahn's (1982b) research which has shown that siblings will turn to one another for "support and solace" (p.217) when certain family stressors, such as parental dysfunction or parent's absence, is present.

CHAPTER THREE

METHOD AND PROCEDURES

Sample

The sample for the present study is composed of 221 intact families with a seventh grade girl or boy plus an older sibling within four years of age. These families are part of a larger study on economic hardship, family relationships, and psychological well-being called the Iowa Youth and Families Project (IYFP). The data for these analyses are from Wave 1 (1989) of the Iowa Youth and Families Project. Permission to use this dataset was granted by the principle investigators of the project. The full sample consists of 451 white, primarily middle-class families each of which include two parents, a seventh grade adolescent, and a sibling within four years of age of the seventh grader. Families live in one of eight adjacent counties in north-central Iowa in an area heavily dependent on agriculture. At the time of the study, 34% of the families lived on farms, 12% lived in rural areas but not on a farm, and 54% lived in towns or small cities with a population under 6,500 (all but one of the towns was under 5,000). Families were interviewed in 1989 for Wave 1 of the panel study.

Family median income from all sources for the calendar year prior to data collection (1988) was \$33,000 and 11.0% of

the families had incomes below the federal poverty line. Median education for both mothers and fathers was 13 years and median ages were 39 years for fathers and 37 years for mothers. Family size ranged from the 4 members required for participation up to 13 members, with the average being 4.95.

The seventh grade adolescents in the study ranged in age from 12.1 years to 14.7 years, with a mean age of 13.2 years. There were 215 seventh grade boys and 236 girls. Siblings ranged in age from 9.4 to 18 years, with a mean of 13.5 years. There were 213 (47%) younger siblings, 231 (51%) older siblings, and 7 (2%) twins. The siblings were about evenly split between females (52%) and males (48%).

Consonant with the review of literature and hypothesized causal processes (e.g., older siblings have resources to provide support), the analyses for this study were based on a subsample of families composed of all seventh graders with an older sibling from the original sample. On average, the family characteristics of these families did not vary significantly from those of the full sample. In the subsample used for the analyses reported here the seventh grade adolescents ranged in age from 12 years to 14 years, with a mean age of 12.6 years. There were 125 seventh grade girls and 96 boys. Siblings ranged in age from 12 years (including three twins) to 17 years, with a mean age of 15 years. There were 128 female and 93 male older siblings.

Procedures

Families were recruited through 34 public and private schools in the eight counties. All eligible families, drawn from lists provided by the school, were sent a letter explaining the project, and were subsequently contacted by telephone and asked to participate. About 78% of the families agreed to be interviewed. Family members were compensated at a rate of about \$10 per hour for time spent in the study. Data collection procedures were approved by the Human Subjects Review Committee at Iowa State University.

Interviews were conducted at each family's home; both visits lasted approximately two hours. During the first session, each of the four family members completed a set of questionnaires concerned with family economic circumstances, individual characteristics, and the quality of family relationships and interactions. During the second interview, which occurred within two weeks of the first, family members were videotaped as they participated in four structured interaction tasks. Task 1 involved all four family members and was concerned with general questions about family life such as household chores, family activities, special events, school performance, and parenting.

The interviewer explained the procedures to the family, had them complete a practice card, then went into another part

of the house out of ear-shot of the discussion. Family member were asked to discuss each question listed on the cards, repeating if necessary, until the interviewer returned. A video camera recorded the family's interactions during their discussions. At the end of Task 1, the interviewer returned, stopped the discussion, and described Task 2. The remaining three tasks were conducted in a similar fashion.

The second task was 15 minutes in length and also involved all 4 family members. This task focused on three topics of potential family conflict selected by the interviewer. Selection was based on short questionnaires completed before beginning Task 1. Family members were requested to discuss and try to resolve the issue identified as leading to the greatest conflict in their family. If they resolved issue one, they could move on to the second and third issue as time permitted. As with task 1, a set of questions guided the discussion.

The third task involved the two siblings and was 15 minutes in length. Siblings discussed their relationship with one another, things liked or disliked about one another, perceptions of parental treatment, friends and school. Parents were asked to go to another part of the house where they could not overhear the discussion and complete a questionnaire. Task 4 involved only the married couple and lasted 30 minutes. Spouses were asked to discuss the history

and current status of their relationship, areas of agreement and disagreement (e.g., about parenting, finances) and their plans for the future. During this task, the two siblings each completed a questionnaire on important events in their lives, again out of ear-shot of their parents' discussion.

All tasks were observed and coded by trained observers using the Iowa Family Interaction Rating Code (Melby et al., 1990). The code includes several dimensions of individual characteristics (e.g., humor, physical movement, and escalate negative) and behaviors of each family member directed toward the other family members (e.g., hostility, warmth, lecture/moralize). Observers received two months of training and had to pass extensive written and viewing tests before they could code videotapes. A separate, independent coder was used to rate each task for the same family. Approximately 12% of all tasks were randomly assigned to a second observer so that interobserver reliability coefficients could be estimated. Interobserver reliability coefficients for the observer ratings used to assess hostility by parents and hostility between siblings were above .80. These coefficients are acceptable for interobserver reliabilities (Suen & Arey, 1989).

Measures

All measures used in these analyses are based on information from Wave 1 (1989) of the Iowa Youth and Families

Project. The current study was designed to provide a realistic or 'complete' picture of family relationships and individual characteristics by incorporating information from multiple sources. Reporting agents were varied where possible, across and within constructs, to minimize biases in estimate of path coefficients (method variance bias) often produced by single sources of information (Bank, Dishion, Skinner, & Patterson, 1990; Lorenz, Conger, Simons, Whitbeck, & Elder, 1991). In this case, information from a seventh grade respondent (the focal child), an older brother or sister, and observer ratings of family interactions were used to assess the concepts. Although two reporters from the same family may weigh more heavily than observer report of relationships, the use of three sources may provide a more realistic picture of a particular relationship (Furman, Jones, Buhrmester, & Adler, 1989).

Parental hostility. Three sources, seventh-grader report, older sibling report, and observer report, were used to assess both mother's and father's hostile behaviors directed toward their children. Each adolescent answered five items which assessed how often in the past month first mother and then father had gotten angry, shouted or yelled, gotten into a fight or argument, and hit, pushed, grabbed, or shoved the respondent. Each item was answered on a 7-point Likert-type format recoded so that 1 indicated a low frequency of

these behaviors and 7 indicated that parents always behaved that way. Internal consistency for reports of Mother's hostility was .81 and .86 (Father's, .82 and .87) for seventh grader and older sibling respectively.

Four observer ratings of father and mother behavior directed toward the seventh grader and his or her older sibling were combined to create a subscale for each parent's hostility. The items included hostile, antisocial, and angry coercive behaviors directed toward the children. The fourth item, transactional conflict, rated the tendency of the parent to reciprocate or escalate hostile behaviors with the sibling and target seventh grader. Ratings of parents' behavior by independent observers from task one (family discussion) and task two (problem-solving) were combined to create a global measure of father's ($\alpha = .87$), and then mother's ($\alpha = .90$) hostility toward both children in the study. Appendix A lists all items used to create the child report and sibling report indicators and includes a brief definition of the four observation scales used to create observer reports of parents' hostility.

Hostility between siblings. This concept was included since hostility between siblings may be an important determinant of adolescent problem behaviors especially those of a hostile, antisocial nature (cf. Patterson, 1984). Hostile adolescent exchanges were assessed by three different

sources, seventh grader report, sibling report, and observer report. Seventh grader report of hostile behaviors by the sibling was used to construct a scale of sibling hostility. The target child reported how often his or her sibling in the study behaved in an angry or hostile fashion during the previous month (one = never behaved that way up to seven = always behaved that way). The five items included behaviors like get angry, shout or yell, fights and argues, and hitting, pushing, shoving. The sibling reported on the same items which were summed to create an index of seventh grader hostility. Internal consistency (alpha) for the seventh grader and the older sibling was .89 and .87 respectively.

Observational ratings were used to construct the observer-report of sibling dyadic hostility. Four items, hostility, antisocial behavior, transactional conflict, and angry coercion, were rated on a 5 -point scale where 1 = low evidence to 5 = high evidence for the specific behavior. These items were summed across Task 1, 2, and 3, each task rated by a different observer, to create a composite score of hostility between seventh graders and their older siblings across all three family interaction settings ($\alpha = .88$). The four observer ratings were parallel to the items used to create the measure of parental hostility. All items used to construct the measures of hostility between siblings are shown in Appendix B.

Warmth and support between siblings. This concept was included to represent possible buffering effects that a warm, supportive sibling relationships might provide for a young adolescent particularly in an otherwise hostile family environment (cf. Bank & Kahn, 1982). As with the sibling hostility construct, this construct was estimated using three different sources of information, seventh grade report, older sibling report, and observer report of sibling interactions. The first measure consisted of seven items reported by the seventh grader about his or her older sibling's behavior during the previous month. Behavior was rated on a 7 - point response format recoded so that one meant the sibling never behaved that way and seven indicated he or she always behaved that way toward the respondent (the seventh grader). Items included behaviors such as listen carefully to your point of view, act loving and affectionate, let's you know he or she appreciates you and your ideas ($\alpha = .92$). These same items were answered by the older sibling about the seventh grader's behaviors to create a measure of seventh grader's warmth and support ($\alpha = .90$). Consistent with the hostility construct, the third measure of warmth and support between siblings was based on observer ratings for five items such as warmth, prosocial exchanges, and listener responsiveness. Ratings for each child were summed across Task 1 (family discussion), Task 2 (problem solving), and Task 3 (sibling discussion) to create

a global assessment of warmth and support between the two siblings in the study ($\alpha = .75$). All items used to create these measures are listed in Appendix C.

Adolescent Adjustment Problems

Adolescent adjustment problems, i.e., emotional distress, are assessed as two separate constructs, symptoms of externalization and symptoms of internalization. Symptoms associated with both internalization and externalization were included because previous research suggests that distressed boys are more likely to display hostile, antisocial behaviors (externalizing) whereas girls are more likely to report symptoms of internalization such as depression and anxiety (Derogatis, 1983; Patterson, 1982; Brooks-Gunn & Peterson, 1984).

Adolescent externalizing behavior. This latent construct is represented by three indicators based on reports by the seventh grader in the study. Antisocial feelings and behaviors are measured with seven items which asked how well each statement described how the seventh grader would feel or act in certain situations (Buss & Durkee, 1957). Responses ranged from 1 (not at all) to 5 (exactly) on items such as 'When someone hits me first, I let them have it', 'When people yell at me, I yell back' ($\alpha = .76$). Hostile feelings and behaviors also were assessed using the hostility subscale of the Symptom Check List - 90 - Revised [SCL-90-R] (Derogatis,

1983) which was split into two subscales, one representing feelings of hostility and one representing actual behaviors. For both subscales, the respondent indicated whether he or she was 1 = 'not at all' up to 5 = 'extremely' bothered or distressed by each feeling or behavior.

Hostile feelings were assessed with three items which asked how much in the past week the respondent was distressed by feeling easily annoyed or irritated, having urges to beat or harm someone, and having urges to break or smash things ($\alpha = .65$). Hostile behaviors were reported by three items: temper outbursts the respondent could not control, getting into frequent arguments, and shouting and throwing things ($\alpha = .68$). Appendix D lists all items used to construct these indicators.

Adolescent internalizing behavior. This construct is represented by three additional subscales from the SCL-90-R (Derogatis, 1983): depression, anxiety, and somatization. The depression subscale included twelve items such as feeling lonely, feeling blue, feeling no interest in things, and feeling everything is an effort ($\alpha = .87$). Anxiety was assessed with ten items asking about problems such as nervousness, suddenly scared for no reason, feeling tense or keyed up, and spells of terror or panic ($\alpha = .85$). The twelve items for somatization included problems like faintness, pains in the chest, trouble getting one's breath, and feeling weak

in parts of the body ($\alpha = .78$). As with the hostility subscale, the respondent indicated whether he or she was 1, not at all, up to 5, extremely, bothered or distressed by each feeling or behavior during the previous two week period.

Appendix E contains all items plus the response format used to construct these three subscales.

CHAPTER FOUR

RESEARCH RESULTS

The results are provided in four sections structured around the type of statistical technique employed and the questions posed by the theoretical model. Section one used correlational analysis to investigate the bivariate relationships between indicators. The remaining sections employed structural equation modeling [SEM] to evaluate first the measurement model and then the hypothesized mediator and moderator family process models. Structural equation modeling was chosen for the primary analysis because of the nature of the data (multi-informant) and the advantages of SEM over simpler forms of multivariate techniques such as multiple regression. This method is seen as advantageous because it allows the researcher: 1) to estimate relationships between observed indicators from multiple sources and some latent (unobserved) variable, 2) to examine the relationships among latent variables while controlling for measurement error, and 3) it provides a parsimonious way to evaluate complex models in addition to assessing each individual equation (Bollen, 1989; Bentler & Chou, 1987). Because the primary interest in this study was evaluating the hypothesized family process

models utilizing multi-informant data, SEM was chosen as the most appropriate method for this investigation.

Correlational Analyses

Table 1 provides the correlations among the different reporters (indicators) of parents' hostility. The zero-order correlation coefficients, along with means and standard deviations, between mothers' and fathers' hostility and all other study variables are shown in Table 2. The correlations among indicators of the sibling relationship and child outcomes indicators are shown in Table 3. Tables of correlations are presented in sections since the indicators of sibling relations and adolescent adjustment were the same across all models; full correlation matrices for both mother and father models would have been quite redundant.

As expected, the correlations between the indicators of mother's and father's hostility were in the expected direction, i.e., all correlations were positive. Correlations within the same source were quite high (e.g., seventh grader report of mother's hostility with father's hostility, $r = .60$). Correlations across reporters also were in the expected direction and indicated modest agreement about both father's and mother's hostility among reporters both within and outside the family (e.g., sibling report and observer report of mother's hostility, $r = .29$).

Table 1
Correlations among indicators of father's and mother's
hostility (n = 221)

Study Variables	(1)	(2)	(3)	(4)	(5)	
1) Father's Hostility, seventh grader report	--					
2) Father's hostility, sibling report	.21	--				
3) Father's hostility, observer report	.25	.23	--			
4) Mother's Hostilty, seventh grader report	.60	.13	.16	--		
5) Mother's hostility, sibling report	.24	.68	.27	.25	--	
6) Mother's hostility, observer report	.29	.17	.45	.18	.29	--

Correlations between the indicators for each parent's hostility were significantly and positively correlated with measures of siblings' hostility both within and across all three reporting agents. These results provide support for the validity of both parent and child hostility measures whether reported by seventh grader, older sibling, or independent observer. All but one of these correlations is statistically significant; the exception being $r = .08$, n.s., between seventh grader report of mother's hostility and observer report of hostile sibling interactions. Similarly, the correlations between mother's and father's hostility and the

Table 2
Correlations, Means, and Standard Deviations for Mother and Father Hostility with
Other Study Variables (n=221).

Study Variables	Father's hostility			Mother's hostility			Mean	SD
	Seventh Grader Report	Older Sibling Report	Observer Report Task 1,2	Seventh Grader Report	Older Sibling Report	Observer Report Task 1,2		
1. Older sibling's hostility, seventh grader report	48	18	29	41	21	25	23.43	8.19
2. Seventh grader's hostility, older sibling report	24	37	27	19	42	29	24.13	7.25
3. Hostility between siblings, observer report, Task 1,2,3	22	15	44	08	12	50	9.06	2.84
4. Emotional support from older sibling, seventh grader report	-19	-11	-14	-09	-10	-15	25.83	9.78
5. Emotional support from seventh grader, older sibling report	-16	-22	-16	-06	-18	-13	31.29	9.13
6. Warmth and support between siblings, observer report, Task 1, 2, & 3	-15	-13	-14	-11	-21	-05	11.68	2.11

(Table 2 cont.)

7. Seventh grader's antisocial attitudes and behaviors	25	06	17	31	08	17	18.42	5.33
8. Seventh grader's hostile feelings	32	15	14	37	08	12	5.08	2.25
9. Seventh grader's hostile behaviors	29	23	13	43	20	14	4.74	2.20
<hr/>								
10. Seventh grader's depression	37	15	06	36	05	13	19.92	7.38
11. Seventh grader's anxiety	31	13	13	39	05	15	15.51	5.66
12. Seventh grader's somatization	21	14	06	29	02	04	18.70	5.74
Mean	14.81	15.36	31.19	15.79	16.14	31.43		
SD	6.03	6.84	10.35	5.77	6.15	8.73		
<hr/>								

Note: Decimal points omitted (for $r \geq .13$, $p < .05$; for $r \geq .175$, $p < .01$).

Table 3
Intercorrelations among sibling relationship indicators and adolescent outcomes

Study Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Older sibling hostility, seventh grader report	--											
2. Seventh grader hostility, older sibling report	<u>.55</u>	--										
3. Hostility between siblings, observer report, Task 1,2,3	<u>.40</u>	<u>.33</u>	--									
4. Emotional support from older sibling, seventh grader report	-.44	-.28	-.28	--								
5. Emotional support from seventh grader, older sibling report	-.41	-.40	-.13	<u>-.43</u>	--							
6. Support between siblings, Observer report, Task 1,2,3	-.27	-.16	-.13	<u>-.28</u>	<u>-.25</u>	--						
7. Seventh grader's antisocial attitudes and behaviors	.23	.15	.22	-.18	-.03	-.07	--					
8. Seventh grader's hostile feelings	.36	.23	.15	-.14	-.05	.01	<u>.46</u>	--				
9. Seventh grader's hostile behaviors	.37	.20	.12	-.11	-.09	-.08	<u>.40</u>	<u>.67</u>	--			
10. Seventh grader's depression	.30	.07	.07	-.17	-.05	-.09	.20	.54	.58	--		
11. Seventh grader's anxiety	.32	.11	.12	-.14	-.05	-.06	.30	.62	.67	<u>.79</u>	--	
12. Seventh grader's somatization	.29	.07	.15	-.17	-.07	-.12	.19	.51	.47	<u>.69</u>	<u>.67</u>	--

Note: Decimal points are omitted (for $r \geq .13$, $p < .05$; for $r \geq .175$, $p < .01$). Correlations within latent constructs are underlined.

three indicators of warmth and support between siblings were all in the expected direction. All but two of the correlations related to father's hostility and sibling support were significant (range: $r = -.12$ to $-.22$); while only three of those for mother's hostility were significant (range: $r = .04$ to $r = -.21$). These correlations provide modest support for the hypothesized relationship between parental hostility and the sibling relationship.

As expected, the correlations between seventh grader report of father's and mother's hostility and seventh grader report of own hostility, anxiety, depression, and somatization were quite robust (e.g., $r = .32$ and $.37$ for father's and mother's hostility respectively correlated with seventh grader's report of own hostile feelings). These associations were supported by modest correlations in the same direction (ranging from $r = .06$ to $.23$) by both sibling and observer report of parental hostility correlated with other variables of interest.

Correlations among indicators within each latent construct were all quite good. Importantly, there were moderate to high correlations between all three sources reporting on hostility between siblings (e.g., $r = .55$ between sibling and seventh grader reports of one another's hostility). The convergence of the three different reporters supports the validity of the reports. Similarly, the validity

of the three indicators of warmth and support is supported by moderate correlations among the three reporters (e.g., $r = .25$ between sibling report of target warmth and observer report). In addition there are modest correlations (range $-.13$ to $-.43$) between all three reporters of sibling hostility and all three reports of sibling support. The low correlation ($r = -.13$) between observer report of hostility and observer report of sibling warmth indicates that these are not just opposite ends of a continuum. As in earlier research, reports of internalizing and externalizing symptoms were significantly correlated (see Cicchetti & Toth, 1991).

Evaluation of the Theoretical Model

The hypothesized relationships shown in Figure 1 were assessed in three stages using a series of structural equation models. The first stage, the measurement model described below, estimated the relationship between mother's and then father's hostility with sibling variables and adolescent adjustment outcomes. Stage two evaluated the proposed mediation models using a 'nested' models comparison strategy. Finally, proposed moderator effects of the relationship between siblings were assessed following a strategy suggested by the work of Bollen (1989), Baron and Kenny (1986), and Wheaton (1985).

The Measurement Model

The conceptual model shown in Figure 1 represents the hypothesized relationships among a number of unobserved or latent variables. In order to evaluate these relationships, each latent variable or construct must be represented by one or more observable (i.e., measurable) indicators. For example, the latent construct called adolescent problems of externalization is represented by three measurable indicators, hostile feelings, hostile behaviors, and antisocial attitudes and behaviors reported by the adolescent. The measurement model allows the researcher to examine the strength of the association between each latent variable with its observed indicator(s) and to estimate the strength of the relationships among the latent variables.

The measurement model established the primary relationship between parental hostility and adolescent adjustment problems as well as the relationship of each indicator to the appropriate latent construct. It is necessary to establish that this relationship (parental hostility directly affects adolescent adjustment) is significant since it is the relationship upon which all subsequent analyses are based. Although the influence of parent's behavior on their children's behavior may be considered a well established relationship (e.g., Maccoby & Martin, 1983; Rollins and Thomas, 1979), it is necessary to

determine that this relationship holds for this sample as well. Similarly, it is necessary to establish that the factor loadings of the three SCL-90-R subscales, depression, anxiety, and somatization, representing Adolescent Internalization appeared in this sample as would be expected by the normed figures reported by Derogatis (1983). Table 4 provides both the factor loadings of indicators on their respective latent variables as well as the coefficients for hypothesized relationships among latent variables.

All proposed relationships among latent variables were in the expected direction. Mother's hostility toward her children, measured by seventh grader report, older sibling report, and observer report correlated with adolescent problems of externalization ($r = .31$) and internalization ($r = .20$). Similarly, father's hostility was related to adolescent problems of externalization ($r = .42$) and internalization ($r = .29$). Mother's hostility correlated $r = .58$ with hostility between siblings and $r = -.39$ with warmth between siblings. Similarly, father's hostility correlated $r = .67$ and $-.49$ with sibling hostility and warmth respectively. Sibling hostility correlated significantly ($r = .37$) with adolescent symptoms of externalization and modestly ($r = .18$) with symptoms of internalization. Warmth between sibling correlated with adolescent externalization ($r = -.13$) and with adolescent internalization ($r = -.10$). Using these results as a base,

Table 4
Factor loadings (λ) of indicators on latent variables (η) and correlations (ψ) among latent variables shown as standardized coefficients. Model descriptions are shown below.

	λ_{11}	λ_{21}	λ_{31}		λ_{42}	λ_{52}	λ_{62}		λ_{73}	λ_{83}	λ_{93}	
Source	Targ	Sib	Obs		Targ	Sib	Obs		Targ	Targ	Targ	
M1	.40	.48	.56		.81	.68	.49		.53	.87	.77	.58
M2	.51	.40	.50		.80	.69	.48		.53	.87	.78	.67
M3	.41	.51	.55		.80	.69	.48		.90	.87	.76	.59
M4	.52	.40	.50		.79	.70	.47		.90	.87	.76	.69
M5	.37	.61	.49		.68	.63	.43		.53	.84	.80	-.39
M6	.50	.47	.46		.67	.64	.42		.53	.86	.79	-.49
M7	.38	.62	.48		.67	.63	.42		.91	.87	.76	-.39
M8	.51	.45	.48		.66	.65	.41		.90	.87	.76	-.49
Model	η_1				η_2				η_3			
M1	Mother's Hostility	Hostility between Siblings						Adolescent Externalization				
M2	Father's Hostility	Hostility between Siblings						Adolescent Externalization				
M3	Mother's Hostility	Hostility between Siblings						Adolescent Internalization				
M4	Father's Hostility	Hostility between Siblings						Adolescent Internalization				
M5	Mother's Hostility	Warmth between Siblings						Adolescent Externalization				
M6	Father's Hostility	Warmth between Siblings						Adolescent Externalization				
M7	Mother's Hostility	Warmth between Siblings						Adolescent Internalization				
M8	Father's Hostility	Warmth between Siblings						Adolescent Internalization				

subsequent analyses turn to an elaboration of these relationships by estimating the causal relationships among latent variables introducing first mediating then moderating variables into the model.

Model Evaluation Strategy

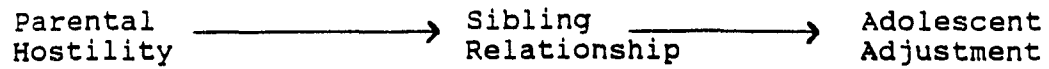
Two basic questions were addressed for each proposed model implied by relationships among variables in Figure 1. Each proposed mediator and moderator model was tested and evaluated using a covariance matrix of relevant study variables. Path coefficients were estimated using maximum likelihood procedures available in the LISREL 7 program (Joreskog & Sorbom, 1989). First, hypothesized relationships between latent constructs were assessed by examining individual standardized path coefficients for each path in each model. Each path represents a hypothesis about the relationship between two latent constructs (e.g., Path B states: Parent's hostility has a direct effect on hostility in the sibling relationship). Path coefficients were considered to be significant if the associated t-test had a value of 2.0 or greater, a generally accepted criteria in structural equation models (e.g., Bollen, 1989; Joreskog & Sorbom, 1989).

Second, each model was evaluated to determine how well it fit the data. Following generally accepted practice (e.g., Bentler & Chou, 1987; Bollen, 1989; Lorenz, Melby, & Skinner, in press), the chi-square statistic and goodness-of-fit

indices (Joreskog & Sorbom, 1989) were used to determine how well each proposed model fit the relevant data. In addition, Hoelter's critical N [CN] was used as another indicator of adequate fit (Hoelter, 1983). "CN gives the sample size at which the F value would lead to the rejection of H_0 [i.e., $\rho = \rho_r$] at a chosen alpha level" (Bollen, 1989, p. 277). Hoelter (1983) suggests a cutoff of a sample size of 200 or greater which may produce a fairly pessimistic assessment of fit for models with small samples.

Finally, each mediation model was compared to a hierarchically-related alternative model in a procedure commonly referred to as a 'nested models' comparison (Bentler & Bonett, 1980; Lorenz, Melby, & Skinner, in press). Briefly, the nested models comparison involves comparing the fit indices of one model to another when one model can be said to be a special case of the other; in this case the recursive model (more restricted model) is said to be 'nested' in the simplex model (less restricted). The change in degrees of freedom from the hypothesized model (the simplex) to the recursive model is compared, here there is a change of 1. Then the related change in chi-square statistic is assessed to determine if the fit of the model has been significantly improved. This analysis strategy is graphically presented in Figure 2.

A. The simplex model



B. The recursive model

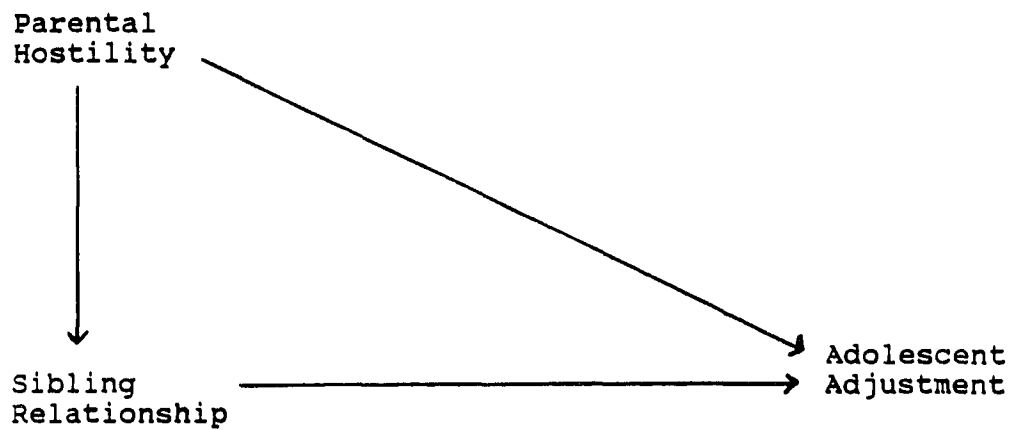
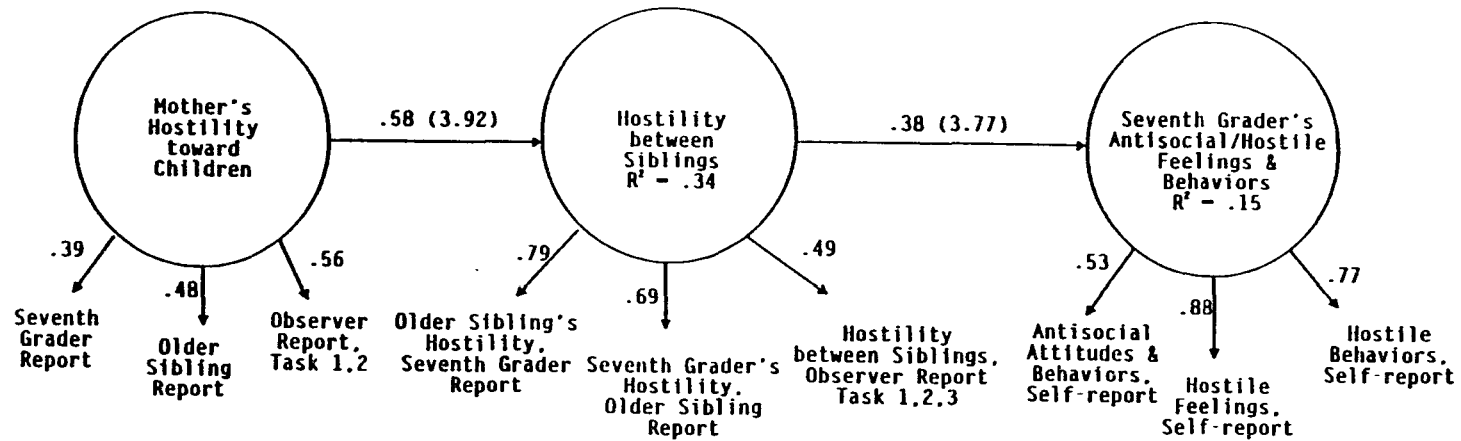


Figure 2. The nested model comparison strategy where Model B is a special case of Model A

The Mediational Models

The results of the analyses for the mediational models linking mother's and father's hostility to seventh grader's antisocial feelings and behaviors are shown in Figures 3 and 4 respectively. These two models introduce hostility between siblings as a mediator which helps explain the relationship between parental hostility and adolescent externalization. Using the "nested models" evaluation technique described earlier, each mediational model was compared to the corresponding recursive model (i.e., allowed estimation of the direct path from parent hostility to adolescent outcome). Although the statistics for the recursive model indicated an adequate fit to the data, there was no significant improvement in the chi-square; hence, there is support for selecting the more parsimonious models shown in Figure 3 and 4.

Turning to the specific results shown in Figure 3, the structural coefficients from mother's hostility to hostility between siblings (.58) and from sibling hostility to adolescent's hostile, antisocial feelings and behaviors (.38) were both statistically significant and in the expected direction. Mother's hostility accounted for 34% of the variance in hostility between seventh graders and their older siblings. Sibling hostility accounted for 15% of the variance in seventh graders' hostile, antisocial feelings and behavior. The pattern of relationships between constructs was similar in



$\chi^2_{(10)} = 22.09$, $p = .140$, GFI = .979, HCN = 261

Figure 3. Standardized coefficients for mother's hostility and hostility between siblings predicting adolescent externalization ($n = 221$). Residuals were correlated across each source of information, t-values for path coefficients are shown in parentheses.

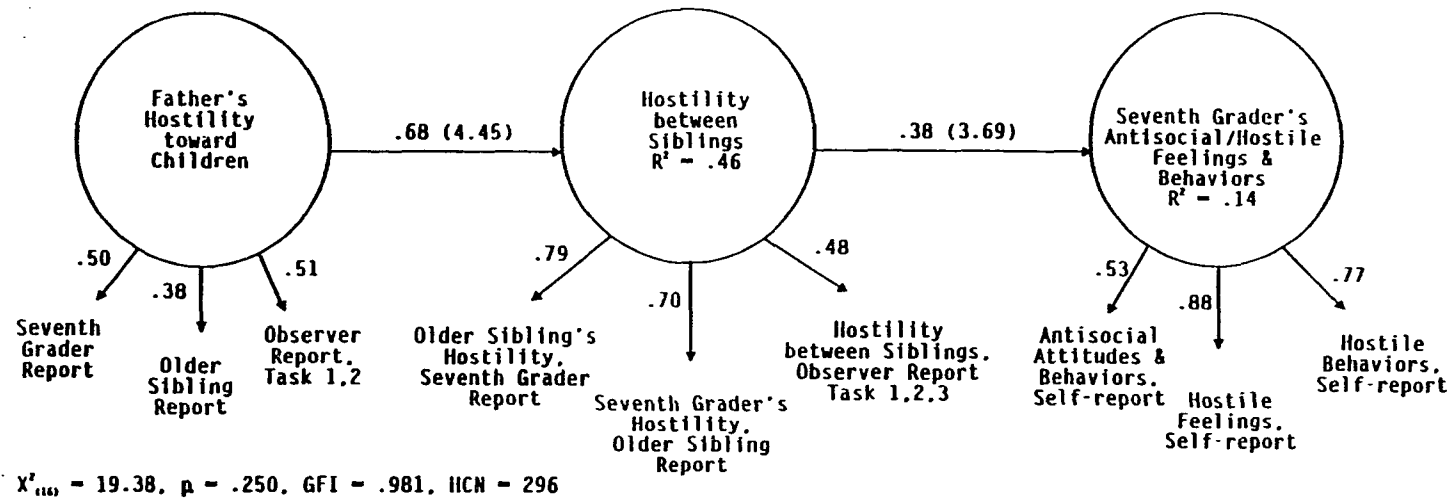


Figure 4. Standardized coefficients for father's hostility and hostility between siblings predicting adolescent externalization ($n = 221$). Residuals were correlated across each source of information, t-values for path coefficients are shown in parentheses.

father's model (Figure 4) where the coefficient from father's hostility to hostility between siblings was slightly higher than mother's, .68 as opposed to .58. The relationship between dyadic sibling hostility and adolescent outcome (.38) was the same as found in mother's model. Father's hostility accounted for 46% of the variance in hostility between siblings. Explained variance in adolescent externalization was essentially the same. In both cases, the fit indices suggest the proposed mediational model fits the data fairly well.

Figures 5 and 6 provide the results of analyses focused on the same family process model presented in Figures 3 and 4 but with a different outcome: adolescent internalization. The coefficients linking parent's hostility to hostility between siblings are essentially the same as shown previously: mother's ($\beta = .59$) and father's ($\beta = .69$). This is expected since the same indicators were used to measure the latent constructs in both models. The structural coefficient between sibling dyadic hostility and internalization (Figure 5, $\beta = .18$ and Figure 6, $\beta = .15$) is much lower than the relationship between siblings' hostility and seventh graders' external distress. The amount of explained variance is quite small, about 3% in each case.

Warmth and support between siblings. The proposed models with sibling warmth and support mediating the relationship

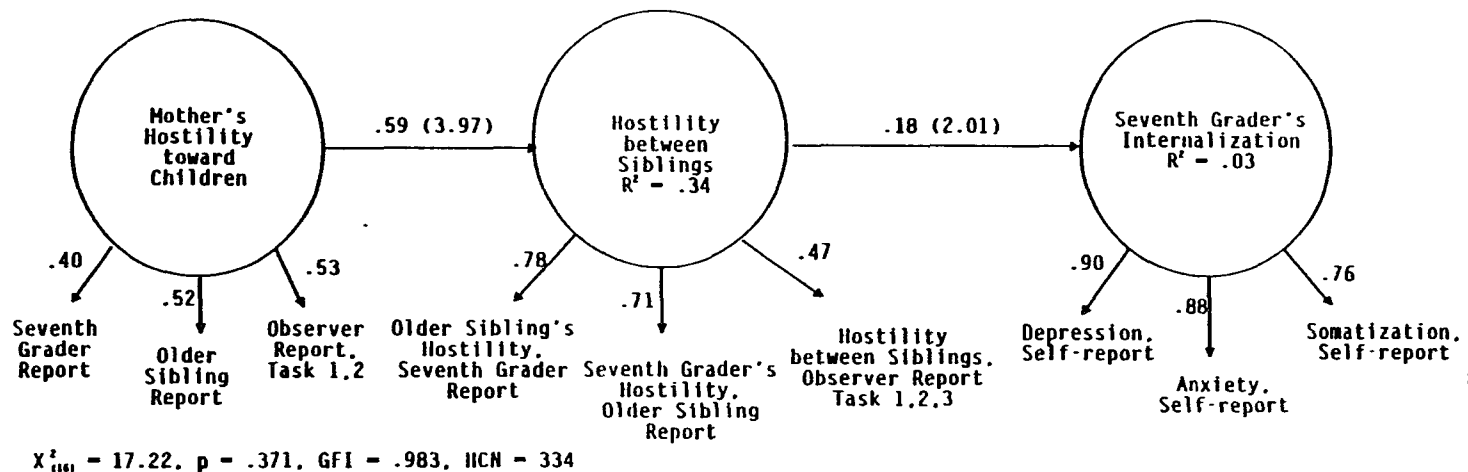
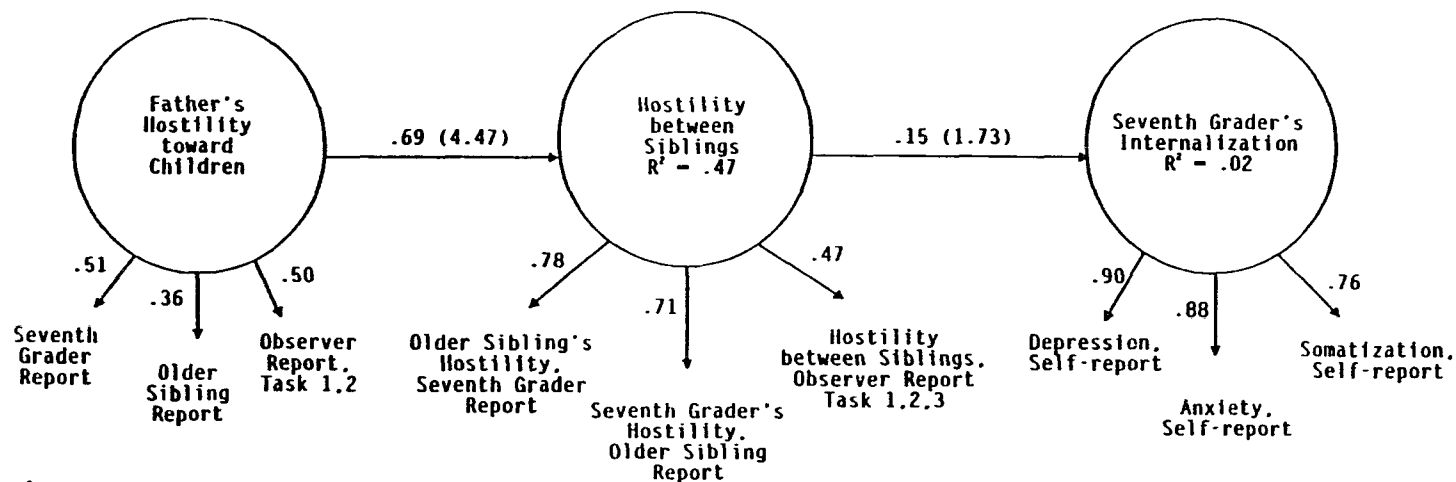


Figure 5. Standardized coefficients for mother's hostility and hostility between siblings predicting adolescent internalization (n = 221). Residuals were correlated across each source of information, t-values for path coefficients are shown in parentheses.



$\chi^2_{(100)} = 17.04$, $p = .383$, GFI = .983, HCN = 338

Figure 6. Standardized coefficients for father's hostility and hostility between siblings predicting adolescent internalization ($n = 221$). Residuals were correlated across each source of information, t-values for path coefficients are shown in parentheses.

between parents' hostility and adolescent outcomes were not supported by the data analyses. Using the same analysis strategy described for Figures 3 through 6, evaluation was completed of the same four mediation models with warmth and support between siblings as the mediator. Although the simplex models initially looked promising, when the direct path from parental hostility to adolescent outcome was added, the path between the sibling relationship and adolescent internalization and externalization became non-significant indicating a spurious relationship. Of interest however, is the highly significant negative effect of each parent's hostility on warmth and support in the sibling relationship. Mother's hostility had a direct effect of $-.38$ while father's hostility had a direct effect of $-.49$. These fairly strong associations indicate the importance of considering the emotional environment parents' promote with their own behavior when investigating sibling relationships. Table 5 provides the model parameters of these four mediation models. The nested models comparison of chi-squared statistic and goodness-of-fit indices are shown in Table 6.

The Moderator Models

The third stage of the analyses involved the assessment of the sibling relationship as a moderator of the relationship between parental hostility and adolescent adjustment problems. A variable is referred to as a moderator when the strength of

Table 5
Model parameters of the hypothesized simplex model where warmth and support between siblings mediate the relationship between parental hostility and adolescent outcome

Latent Variable Indicators	Mother Model		Father Model	
	Factor Loadings	Error Variance	Factor Loadings	Error Variance
A. Parent hostility towards children				
1. Seventh grader	.30	.91	.45	.80
2. Older sibling	.62	.61	.44	.81
3. Observer report, Task 1 + 2	.48	.77	.45	.81
B. Warmth and Support between siblings				
4. Seventh grader	.67	.55	.66	.56
5. Older sibling	.64	.60	.64	.59
6. Observer report, Task 1, 2, + 3	.43	.82	.42	.82
C. Adolescent Externalization				
7. Antisocial attitudes	.52	.73	.52	.73
8. Hostile feelings	.87	.29	.87	.29
9. Hostile behaviors	.78	.40	.77	.40
D. Adolescent Internalization				
10. Depression	.91	.18	.90	.18
11. Anxiety	.87	.24	.87	.24
12. Somatization	.76	.43	.76	.43
Theta Epsilon				
	Externalization		Internalization	
	Mother	Father	Mother	Father
41	-.01	-.03	-.01	-.03
52	-.03	-.07	-.04	-.08
63	-.06	-.05	.06	-.04
71	.27*	.20*	.33*	.32*
81	.34*	.26*	.36*	.25*
91	.38*	.22*	.27*	.15*
74	-.11	-.11	-.08	-.08
84	-.06	-.05	-.04	-.04
94	.01	.01	-.09	-.09

Autocorrelated measurement error terms, * = t-value > 2.0

Table 6
 Goodness-of-fit measures for comparison of mediation models
 with warmth and support between siblings
 where Model A is the mediational model and Model B is the
 fully recursive model

Model	X	df	change in X	GFI	CN
<u>Mother's Hostility and Adolescent Externalization</u>					
A	23.32	16	-	.977	246
B	18.10	15	5.22 *	.982	302
<u>Adolescent Internalization</u>					
A	12.32	16	-	.988	465
B	11.18	15	1.14	.989	485
<u>Father's Hostility and Adolescent Externalization</u>					
A	22.02	16	-	.979	261
B	12.03	15	9.99 **	.988	454
<u>Adolescent Internalization</u>					
A	13.10	16	-	.987	438
B	8.56	15	4.54 *	.991	634

Note. * = $p < .05$; ** = $p < .01$.

a Goodness-of-fit index (GFI) (Joreskog & Sorbom, 1989)

b Hoelter's Critical N index (CN) (Hoelter, 1983)

the relationship between an explanatory variable and an outcome variable is contingent upon the value of the third variable (Baron & Kenny, 1986; Wheaton, 1985). In regression analysis and analysis of variance, moderator effects are examined by creating an interaction variable or term (i.e., the product obtained by multiplying the explanatory variable by the proposed moderator variable) which is entered into the regression equation (Jaccard, Turrisi, & Wan, 1990).

Moderator effects also may be evaluated in the framework of structural equation modeling. The proposed moderator variable is dichotomized and the sample is divided at the median into two groups; a low group and a high group. These two groups are simultaneously estimated and the resulting path coefficients are compared. As a final test of the moderator models, the structural coefficients of the low and high groups were compared for significant differences using a technique of stacking structural equation models (Bollen 1989; Jöreskog & Sörbom, 1989). Following the logic of hierarchically nested models, the baseline model was the least restricted model with both the measurement model and the structural model allowed to estimate parameters with the same pattern for both high and low groups. The comparison models imposed the restriction of invariance on the structural coefficient (Beta) between parent hostility and adolescent externalization for the high and low support groups. As with nested models, the change in chi-

square was examined to determine if there was a significant change in fit between the two sets of models. Figure 7 provides a pictorial representation of this model comparison technique.

The proposed moderator models were not supported by the data analysis. The hypothesized model proposed that the strength of the relationship between parental hostility and adolescent outcome was contingent on the level of either hostility between siblings (Path D, Figure 1) or warmth and support between siblings (Path G, Figure 1). Both moderator effects were assessed with the procedures described earlier. Since each proposed moderator variable was a latent construct in these models, the reports from the three different sources were standardized and summed before the variable was dichotomized. The low group and high group then were estimated and evaluated following the guidelines listed earlier. Table 7 summarizes the analyses for these models.

Alternative moderator models. Although not originally proposed in the theoretical model, the investigator decided to add an alternative model that used adolescent perception of older sibling's warmth and support as the moderator variable. Perhaps as Rohner (1975, 1986) suggests, it is the child's perception of the warmth and support (or lack thereof) which is important in determining the impact on their development. It was initially proposed that warmth and support between

Model A. The low behavior group

Parental Hostility _____ Adolescent Adjustment

Model B. The high behavior group

Parental Hostility _____ Adolescent Adjustment

Figure 7. Pictorial representation of the stacked model comparison technique using LISREL 7 where the relationship between parental hostility and adolescent adjustment is contingent on the level of sibling behavior (i.e., hostility or warmth)

Table 7

Standardized path coefficients (common metric) for the stacked model comparison of moderator models where the association between parent's hostility and adolescent outcome is contingent on the level of hostility or warmth between siblings.

Predictor Variable Adolescent Outcome	Hostility Between Siblings		Model Fit					
	Low(β)	High(β)	χ^2_a	df	p value	GFI	χ^2_b	$\Delta\chi^2(1)$
1. Mother's Hostility								
a. Externalization	.11	.15	11.36	10	.330	.998	11.39	0.03
b. Internalization	.12	-.002	9.99	10	.442	.989	10.29	0.30
2. Father's Hostility								
a. Externalization	.11	.32	12.57	10	.249	.978	na	na
b. Internalization	.56	.12	10.24	10	.420	.988	11.22	1.02
	Warmth between Siblings							
	Low	High						
3. Mother's Hostility								
a. Externalization	.19 ^A	.41 ^A	13.40	10	.202	.981	14.70	1.30
b. Internalization	.10	.54 ^A	16.81	10	.079	.958	21.04	4.23
4. Father's Hostility								
a. Externalization	.23	.81	6.23	10	.796	.996	9.44	3.21
b. Internalization	.24	.40	10.92	10	.364	.980	11.35	0.43

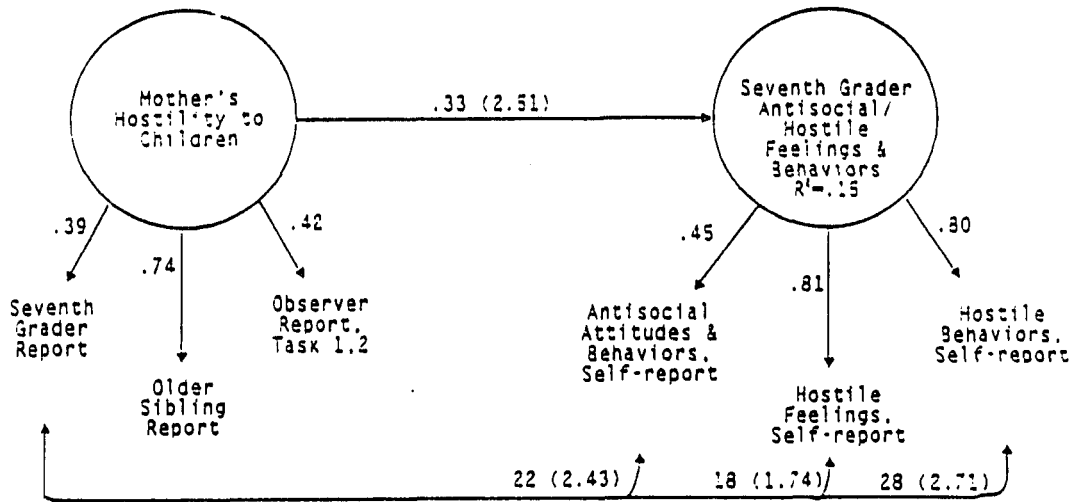
Note: χ^2_a is for the model where the two beta coefficients are allowed to estimate (same pattern structure).
 χ^2_b is for the model where the two beta coefficients are set equal (invariant)

siblings, reported by the same three sources as hostility: seventh grader, older sibling, and observer, would moderate the relationship between parental hostility and adolescent adjustment. However, these three sources did not form a strong, consistent latent construct as was the case for hostility between siblings. It may be that warmth and support is more subjective and less overt than hostility and, consequently, there is less agreement between respondents and between respondents and observers. As a result, seventh grader report (or perception) of their sibling's warmth and support may be the most appropriate indicator to use as a proposed moderator.

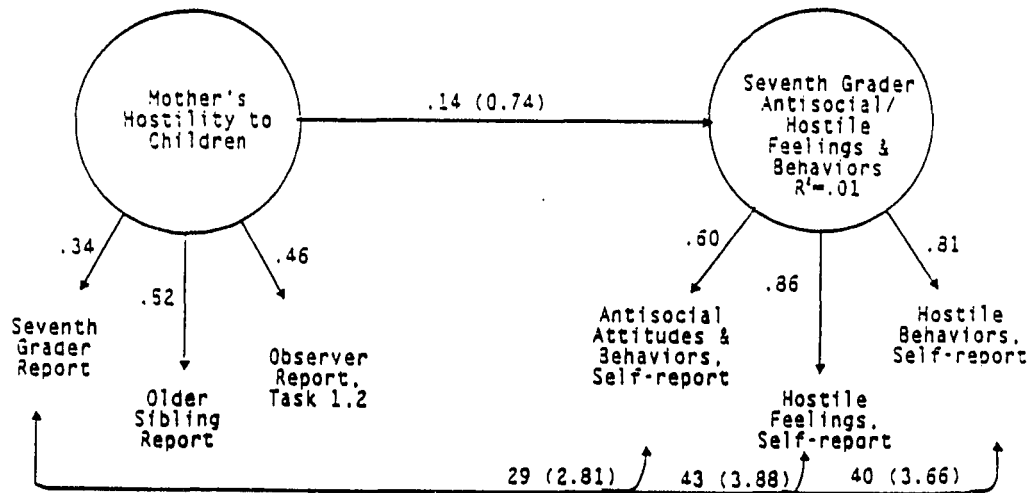
The proposed moderator variable, seventh grader report of older sibling's warmth and support during the previous month, was dichotomized by splitting it at the median and comparing the two groups simultaneously as described earlier. Some support of a moderator effect is shown in figure 8 for mother and figure 9 for father, where the relationship between parent's hostility and seventh grader's hostile behaviors is contingent upon level of warmth and support from older sibling.

In situations where the seventh grader reports a low level of support from an older sibling, mother's hostility is significantly related to adolescent antisocial, hostile feelings and behaviors (.33, Figure 8); results are similar

Model A

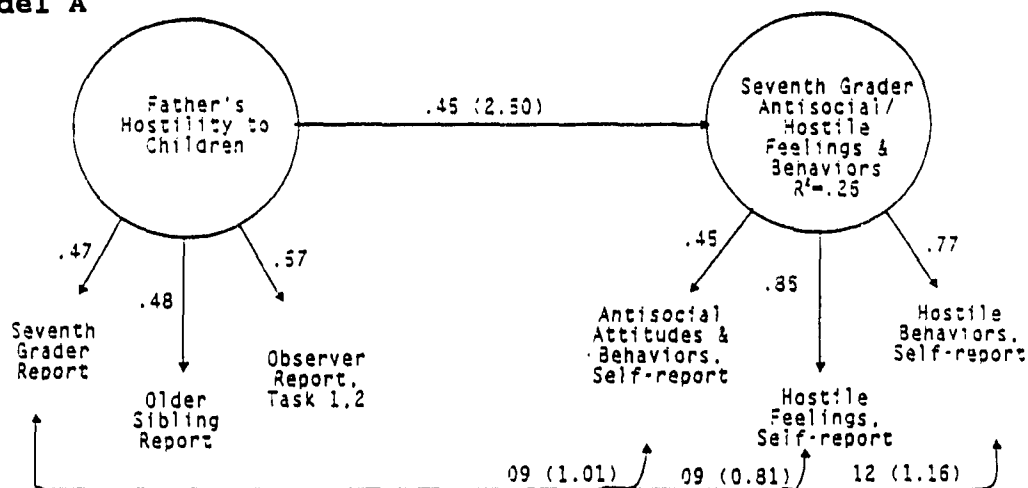
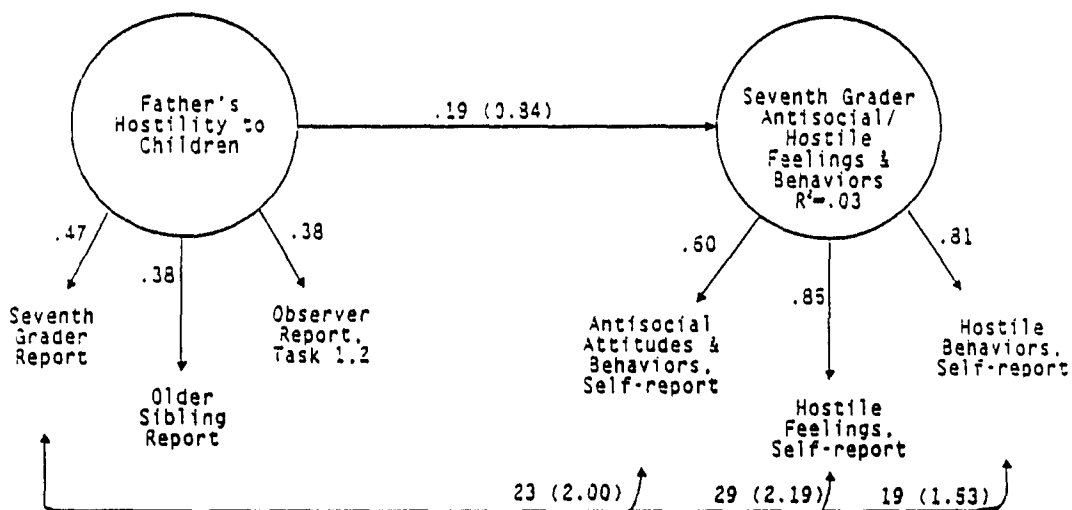


Model B



For comparison of models: $\chi^2_{(1)} = 11.74$, $p = .303$, GFI = .975

Figure 8. Standardized coefficients for mother's hostility predicting seventh grader's antisocial, hostile feelings and behaviors contingent on the level of older sibling's warmth and support; Model A shows high and Model B shows low levels of sibling warmth and support. Residuals were correlated across constructs for same source, t-values are shown in parentheses.

Model A**Model B**

For comparison of models: $\chi^2_{(1)} = 9.33$, $p = .501$, GFI = .980

Figure 9. Standardized coefficients for father's hostility predicting seventh grader's antisocial, hostile feelings and behaviors contingent on the level of older sibling's warmth and support; Model A shows high and Model B shows low levels of sibling warmth and support. Residuals were correlated across constructs for same source, t-values are shown in parentheses.

for father's hostility (.45, Figure 9). However, when older sibling warmth and support is reported to be high, the relationship between parent hostility and adolescent externalization becomes fairly small and non-significant: for mothers (.14); for fathers (.19). Fit indices for the model comparisons indicate a good fit with the data (e.g., Figure 8, $\chi^2_{(10)} = 11.74$, $p = .303$ and Figure 9, $\chi^2_{(10)} = 9.33$, $p = .501$).

Using the stacked models comparison procedure described earlier, each pair of models was compared to another pair of models with the only difference being that the path connecting the two latent constructs was freed (i.e., allowed to estimate). The change in chi-square statistic was compared for each set of models; in all instances there was a change of 1 in the degrees of freedom. Table 8 contains the results for all model comparisons involving parents' hostility and adolescent internalization; in no case was there a moderator effect of older sibling warmth and support when the outcome was adolescent internalization.

Results were quite surprising when models with an outcome of externalization were compared; in each case the difference in fit was not significant: for mothers ($\chi^2_{(1)} = 0.54$); for fathers ($\chi^2_{(1)} = 0.63$). However, the relationship between parent hostility and adolescent externalization remained large and significant for the low support group and fairly small and

Table 8

Part A. Standardized path coefficients for parent's hostility and seventh grader internalization moderated by older sibling's warmth and support. Values shown are for models with same pattern for all parameters.

Predictor Variable	Older Sibling Warmth & Support			
	Low	R2	High	R2
I. Mother's Hostility	.10	.01	.08	.01
II. Father's Hostility	.25	.06	.18	.04

Note. All path coefficients are non-significant.

Part B. Chi-square statistic and goodness-of-fit (GFI) indices for same pattern stacked models

Model	X	df	p value	GFI
I.	12.63	10	.245	.991
II.	10.12	10	.430	.985

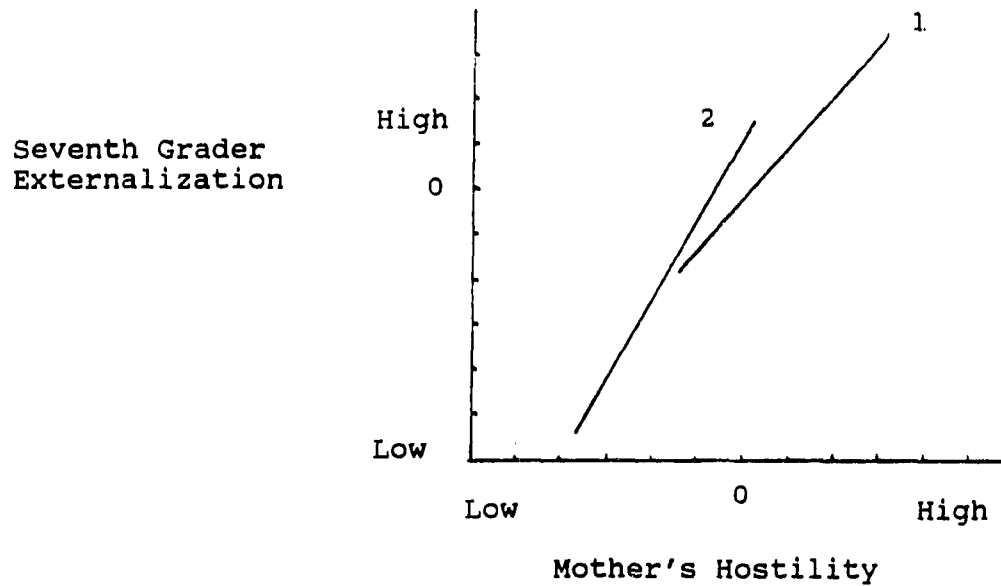
non-significant for the high support group. These results were puzzling given the large significant structural coefficient in the low sibling support group. As a result, one further test of the data was applied, the use of the structured means procedure was used to determine if the two groups being compared were equivalent as required.

Structured means. Briefly, the modeling of structured means was developed by Joreskog and Sorbom (1989) as a method of examining differences between means of latent constructs such as those used in simultaneous comparison of moderator models. "Although the mean of a latent variable is undefined (not identified) in a single group, group differences in the means of latent variables can be estimated if the latent variables are on the same scale in all groups" (Joreskog & Sorbom 1989, p. 275). This estimation technique allows the researcher to determine if the two groups may vary significantly on one or more of the concepts used in the model. While actual means for each latent construct are not estimated, the program allows a comparison of the relative difference if one mean is fixed to zero and the other is allowed to vary. Results are then examined to determine slope of the relationship between the independent and dependent construct for both the high and low groups.

Model comparisons were done for mother and then father models using LISREL 7. These results shed some light on the

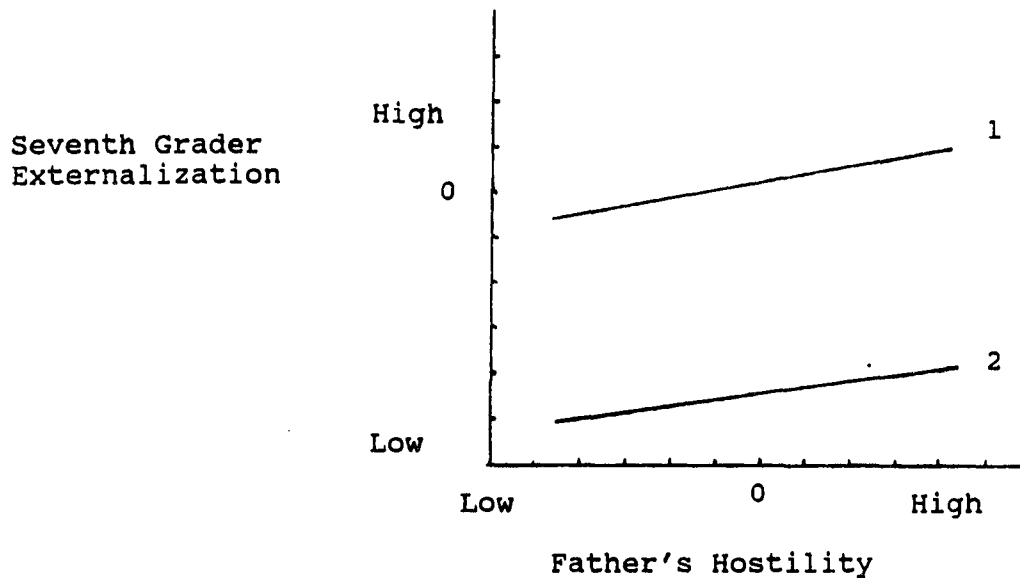
perplexing findings of the moderator models reported in Figures 8 and 9. In the case of mother's models (Figure 10), we found that the high support and low support groups were non-equivalent, i.e., mean level of both mother's hostility and seventh grader hostility were lower when sibling support was high. Plotting the slopes for the high and low group indicated a possible interaction effect which supports the initial findings reported for the moderator effect of sibling warmth and support. Results for the father hostility models (see Figure 11) were less clear cut with almost no difference between groups for father's hostility but a significant difference for seventh grader hostile, antisocial feelings.

These results clearly suggest the need for further research on these questions. These particular results should be interpreted with caution since the analyses are based on cross-sectional data.. As such, the 'causal' direction of the hypothesized relationships was determined based on well established family processes, such as parents influence their children and not the reverse (e.g., Maccoby & Martin, 1983; Rollins & Thomas, 1979). However, the author acknowledges that the relationship between the parent-child sub-system and the sibling sub-system is a reciprocal one; this may be especially true during adolescence when children are establishing their independence from parents and the power and authority of parents may be challenged. As a first step in



Group	Means of Latent Constructs		
	Mother's Hostility	Adolescent Externalization	Slope
1	0	0	1.38
2	-1.50	-1.46	1.73

Figure 10. Results of structured means comparison for mother hostility models; relationship between mother's hostility and adolescent externalization contingent upon level of sibling warmth and support where Group 1 is low support and Group 2 is high support.



Group	Means of Latent Constructs		
	Father's Hostility	Adolescent Externalization	Slope
1	0	0	.35
2	-0.83	-4.68	.34

Figure 11. Results of structured means comparison for father hostility models; relationship between father's hostility and adolescent externalization contingent upon level of sibling warmth and support where Group 1 is low support and Group 2 is high support.

untangling the mutual influence between parents and children, this study uses parents' behavior as the predictor because parents are the primary source of power and authority in the family system and, as such, serve as important models of behavior throughout childhood (Gecas, 1981; Peterson & Rollins, 1987).

CHAPTER FIVE

DISCUSSION AND CONCLUSIONS

The current study was designed to address two primary questions. The first question involves a set of questions about the nature of the sibling relationship and how it influences the well-established relationship between parents' behavior and adolescent adjustment. The second involves a more general question of the usefulness of incorporating information from both children in the sibling relationship; do we gain additional useful information about family relationship processes by including the reports of another family member? These questions are discussed starting with the second global question then moving to the more specific issues raised by the first question.

The second question addresses an interest in elaborating previous research on family relationships by including sibling relationships as an important factor in explaining family processes (i.e., interactions and relationships) and individual adjustment. Although the results should be interpreted with caution due to the cross-sectional nature of the data, in general, the results presented here support the inclusion of the sibling subsystem as an important source of information when investigating family relationships.

Specifically it appears that we gain unique information about both parent-child interactions and adolescent development when siblings are included as another source of information. This is consistent with findings from a number of studies (see Boer & Dunn, 1992; Lamb & Sutton-Smith, 1982). It is especially important to include sibling-report information, as opposed to parent-report on the sibling relationship, since the sibling may have quite a different perspective on the relationship (Dunn & Plomin, 1990; Furman et al., 1989). As Dunn (1983) and Minuchin (1988) suggest, a more complete picture of family relationships is possible by including all family subsystems; marital, parent-child, and sibling. This study starts that process by including the two family sub-systems most salient to children's everyday lives, the parent-child sub-system and the sibling sub-system.

The central focus of the analyses investigated the nature of the sibling relationship, hostile or supportive, and its role as a mediator and moderator of the relationship between parental hostility and adolescent adjustment. The results presented here demonstrate the importance of considering both sibling hostility and warmth in analyses of family processes. The relationship among latent variables (i.e., parental hostility and adolescent outcome) are consistent with the idea that parental hostility is an important factor to consider when investigating adolescent adjustment. This association is

not surprising given the empirical evidence for this well established relationship (e.g., Bandura, 1973; Patterson, 1982, 1984, 1986; Rohner, 1986; Rollins and Thomas, 1979).

Regardless of the 'cause' of parents' irritable, hostile interactional style with their children; it is clear that both mother's and father's hostility have negative consequences for both the sibling relationship and for adolescent adjustment. These results suggest that siblings may emulate their parents' hostile interactional style in their own interactions. These hostile interactions in turn appear to put the adolescent at increased risk for developing an antisocial, hostile interpersonal style. These results are consistent with those reported by Patterson (1984, 1986) that indicate that parents and siblings play important roles in establishing and maintaining hostile interpersonal behavior patterns within the family system. The findings from the present study, based on a 'normal' population, provide important validation of causal processes found by Patterson's group (1984, 1986) in high risk samples.

The 'fact' that children may emulate their parents' hostile behaviors may not be surprising given the important role parents' play in their children's lives (e.g., Maccoby & Martin, 1983; Peterson & Rollins, 1987; Rutter, 1980, 1991). If it is true, as Bryant (1982) and Dunn (1982) suggest, that hostile, conflictual interactions between siblings take place

in a usually positive relationship then there may not be much need for concern when siblings fight and bicker. However, if hostility and aggression between siblings is allowed to escalate to the point where the behaviors become abusive or violent, the consequences may be damaging for one or both of the children involved (see Sussman & Steinmetz, 1983; Straus, Gelles, & Steinmetz, 1980).

One interesting finding is the strong negative effect parents' hostility had on warm and supportive feelings between siblings. If hostile behaviors by parents act both to increase hostile behaviors between siblings and to diminish feelings of warmth and support, a young adolescent may be most at risk for developing a hostile interactional style (cf. Patterson, 1986) or feelings of depression and worthlessness (e.g., Rohner, 1986; Whitbeck et al., 1991). It may be that feelings and behaviors of hostility and warmth must be considered simultaneously to gain a better understanding of the emotional nature of the sibling relationship. Hetherington (1988) suggests that we need to investigate the relative levels of hostile, aggressive behaviors and caring, supportive behaviors between siblings. In a study of sibling relationships in families with divorced parents, Hetherington (1988) found about 22 percent of their sample had a hostile, alienated relationship which was "characterized by low involvement, communication, warmth, or empathy, and high

coercion and aggression" (p.327). Siblings who are in a relationship devoid of any warmth or caring during times of stress (such as the changes associated with early adolescence) may be at increased risk for becoming hostile and aggressive or withdrawn and depressed (Hetherington, 1988; Kahn & Lewis, 1988). Indeed, it may be those children who have no one within the family to whom they can turn in times of stress who are most at risk for problematic adjustment.

Furthermore, evidence is accumulating (Bryant, 1982; Furman & Buhrmester, 1985; Hetherington, 1988) which suggests the importance of considering the amount and type of involvement between siblings. Furman and Buhrmester (1985) suggest it is the frequency of contact which is the determining factor in explaining warmth and closeness and conflict. They propose that siblings who interact more frequently may experience both more positive and more negative interactions. They also suggest that infrequent interactions may in fact indicate some form of avoidance or rejection (cf. Hetherington, 1988). Siblings who are experiencing many of the same life events associated with adolescence, e.g., puberty, dating, new school, etc., may have many shared interests, friends, and school-related activities and thus be quite involved in each other's lives. This involvement may lead to feelings of rivalry, competition, and even aggression when a sibling is seen as interfering with one's own goals.

However, close involvement may also engender feelings of loyalty (see Bank & Kahn, 1982), warmth and support, and offers of advice and companionship. This would be consistent with Bryant's (1982) suggestion that early adolescent sibling relationships are characterized by behaviors that are both 'interfering and facilitative'. Hetherington (1988) found that a majority of sibling relationships in her study fell into a category called 'ambivalent' which may be an apt description of sibling relationships during adolescence.

The modest evidence for a possible 'buffering' effect of warmth and support from an older sibling raises more questions than it answers at this point. Although there is evidence of sibling support among children of divorced parents (Hetherington, 1988), for children in high-risk family environments (Werner & Smith, 1982), and for siblings in therapy (Kahn & Lewis, 1988); it is not yet clear what factors predict the development and maintenance of sibling support. Perhaps siblings who have a history of involvement, concern, and communication may be especially well equipped to maintain that type of relationship even when parents' behavior promotes a hostile, non-supportive family environment. This question is one that deserves further careful research.

Limitations. As with any study, a number of limitations must be noted. The results presented here are clearly a first step in developing a model adequate to the task of explaining

the complex relationship among parent's behaviors, siblings relationships, and adolescent adjustment. Although the results provided here present one strategy for exploring the nature and significance of sibling relationships, there are limitations which need to be addressed before moving to more complex models. The first limitation is that these results are based on cross-sectional data and as such should be interpreted with caution. Although the proposed hostility models fit the data adequately by most criteria, it may be the case that there are other models that might fit equally well (e.g., hostility between siblings predicts parents' hostility). The first recommendation then is to investigate these causal processes over time.

The second limitation is using only parents' hostility to represent parenting behaviors. Measures that include the vast array of parenting skills (e.g., monitoring, harsh discipline) and emotional affect (warmth, hostility) are needed in order to assess the complex manner in which parents' behavior influences both the relationship between siblings and each child individually. This is consistent with research reported by Simons, Conger, Whitbeck, and others (1988, 1990, 1991, 1992), Patterson (1982, 1984, 1986), and Rollins and Thomas (1979).

Another limitation is the focus on outcomes for just one child. Recent research on differences among siblings in the

same family (e.g., Daniels, Dunn, Furstenberg, & Plomin, 1985; Dunn & Plomin, 1990) suggest the need to examine outcomes for both children in the sibling pair. Although genetic makeup may explain some of the differences, and similarities, in individual characteristics, each child also may help create a different environment for their brother or sister through their behaviors in the family setting. It may require the marriage of behavioral genetics and social psychology to begin to piece together the family environment experienced by each child in the family and how these factors influence individual outcomes.

Furthermore, the gender of each child and the gender composition of the sibling dyad should be considered in future research on the influence of sibling relationships. So far the results have been inconclusive as to whether there is more friendliness among female sibling pairs (Dunn & Kendrick, 1982b), more hostility in any sibling dyad that includes a boy (Brody et al., 1992), or more hostility among same-sex dyads due to the need to establish distinct identities (Schacter & Stone, 1987). Compounding this issue, Steinberg (1987) concluded that gender differences reported in adolescence were frequently overstated. Clearly, the issue of gender differences deserves inclusion in future research on the influence of sibling relationships on adolescent adjustment.

In addition, future research may benefit from utilizing a theoretical framework based on social comparison process (e.g., Festinger, 1954; Gibbons & Gerrard, 1991; Schachter, Shore, Feldman-Rotman, Marquis, & Campbell, 1976) and equity theory (e.g., Ihinger, 1975; Walster, Walster, & Berscheid, 1978) in order to understand each child's viewpoint on family relationships. There is growing evidence that each child may evaluate how he or she is being treated relative to how the brother or sister is being treated (see Bryant, 1982; Schacter & Stone, 1985). This perspective may also be the most promising for further investigations of age and gender differences within sibling relationships; as yet results in this area are fairly inconsistent.

In conclusion, the present findings are consistent with an accumulating body of evidence that siblings play important roles in childrens' lives. Behavior in the sibling relationship may contribute to the spread or containment of hostility within the family system and, in turn, help explain the consequences of those behaviors for adolescent adjustment. The present findings suggest that, when assessing family relationships and individual adjustment, the researcher may be well served to make the extra effort necessary to obtain information from all family members concerned.

REFERENCES

- Abramovitch, R., Pepler, P., & Corter, C. (1982). Patterns of sibling interaction among preschool-age children. In M. E. Lamb & B. Sutton-Smith (Eds.), Sibling relationships: Their nature and significance across the life span (pp. 61-86). Hillsdale, NJ: Lawrence Erlbaum.
- Adams, B. N. (1972). Birth order: A critical review. Sociometry, 34, 411-439.
- Adams, B. N. (1968). Kinship in an urban setting. Chicago: Markham Publishing.
- Adler, A. (1959). Understanding human nature. New York: Premier Books.
- Allan, G. (1977). Sibling solidarity. Journal of Marriage and the Family, 39, 177-184.
- Almeida, D. M., & Galambos, N. L. (1991). Examining father involvement and the quality of father-adolescent relations. Journal of Research on Adolescence, 1, 155-172.
- Bandura, A. (1973). Aggression: A social learning analysis. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1977). Social learning theory. Englewood Cliffs, NJ: Prentice-Hall.
- Bank, L., Dishion, T., Skinner, M., & Patterson, G. R. (1990). Method variance in structural equation modeling: Living with "glop" In G. R. Patterson (Ed.), Depression and aggression in family interactions (pp. 247-279). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Bank, S., & Kahn, M. D. (1982a). Intense sibling loyalties In M.E. Lamb & B. Sutton-Smith (Eds.), Sibling relationships: Their nature and significance across the lifespan (pp. 251-266). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Bank, S.P. & Kahn, M.D. (1982b). The sibling bond. N.Y.: Basic Books.
- Baron, R. M., & D. A. Kenny. (1986). The moderator - mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality and Social Psychology, 51, 1173-1182.

- Bedford, V.H. (1989). Understanding the value of siblings in old age: A proposed model. In V.H. Bedford & D.T. Gold (Eds.), Siblings in later life: A neglected family relationship (pp. 33-44). [special issue]. American Behavioral Scientist, 33(1).
- Bedford, V.H. & Gold, D.T. (Eds.). (1989). Siblings in later life: A neglected family relationship [special issue]. American Behavioral Scientist, 33(1).
- Bentler, P. M., & Bonett, D. G. (1980). Significance test and goodness-of-fit in the analysis of covariance structures. Psychological Bulletin, 88, 588-600.
- Bentler, P. M., & Chou, C. P. (1987). Practical issues in structural modeling. Sociological Methods and Research, 16, 78-117.
- Berado, F. M. (1980). Decade Preview: Some trends and directions for family research and theory in the 1980s. Journal of Marriage and the Family, 42, 723-728.
- Berado, F. M. (1990). Trends and directions in family research in the 1980s. Journal of Marriage and the Family, 52, 809-817.
- Bigner, J. J. (1974). Second borns' discrimination of sibling role concepts. Developmental Psychology, 10, 564-573.
- Boer, F. & Dunn, J. (1992). Childrens' sibling relationships: Developmental and clinical issues. Hillsdale, NJ: Lawrence Erlbaum.
- Bollen, K. (1989). Structural equations with latent variables. New York: Wiley.
- Brody, G. H. & Stoneman, Z. (1987). Sibling conflict: Contributions of the sibling themselves, the parent-sibling relationship, and the broader family system. In F. F. Schachter & R. K. Stone (Eds.), Practical concerns about siblings: Bridging the research-practice gap. (pp. 39-54). [special issue]. Journal of Children in Contemporary Society, 19.
- Brody, G. H., Stoneman, Z., MacKinnon, C., & MacKinnon, R. (1985). Role relationships and behavior between preschool-aged and school-aged sibling pairs. Developmental Psychology, 21, 124-129.

- Brody, G. H., Stoneman, Z., McCoy, J. K., & Forehand, R. (1992). Contemporaneous and longitudinal associations of sibling conflict with family relationship assessments and family discussions about sibling problems. Child Development, 63, 391-400.
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. Developmental Psychology, 22, 723-742.
- Brooks-Gunn, J., & Peterson, A. C. (1984). Problems in studying and defining pubertal events. Journal of Youth and Adolescence, 13, 181-196.
- Bryant, B.K. (1982). Sibling relationships in middle childhood. In M.E. Lamb & B. Sutton-Smith (Eds.), Sibling relationships: Their nature and significance across the lifespan (pp. 87-121). Hillsdale, N.J.: Lawrence Erlbaum.
- Bryant, B.K. & Crockenberg, S. (1980). Correlates and dimensions of prosocial behavior: A study of female siblings with their mothers. Child Development, 51, 529-544.
- Buhrmester, D. & Furman, W. (1990). Perceptions of sibling relationships during middle childhood and adolescence. Child Development, 61, 1387-1398.
- Bush, D. M., & Simmons, R. G. (1981). Socialization processes over the life course. In M. Rosenberg & R. H. Turner (Eds.), Social psychology: Sociological perspectives (pp. 133-164). New York: Basic Books.
- Buss, A., & Durkee, A. (1957). An inventory for assessing different kinds of hostility. Journal of Consulting Psychology, 21, 343-349.
- Christensen, A. & Margolin, G. (1988). Conflict and alliance in distressed and non-distressed families. In R. A. Hinde & J. Stevenson-Hinde (Eds.), Relationships within families: Mutual influences (pp.263-282). Oxford: Claredon Press.
- Cicchetti, D. & Toth, S. L. (Eds.) (1991). Internalizing and externalizing expressions of dysfunction. Rochester Symposium on Developmental Pyschopathology (Vol. 2). Hillsdale, NJ: Lawrence Erlbaum.

- Cicirelli, V.G. (1980). A comparison of college women's feelings toward their siblings and parents. Journal of Marriage and the Family, 42, 95-102.
- Cicirelli, V. G. (1977). Relationship of siblings to the elderly person's feelings and concerns. Journal of Gerontology, 131, 309-317.
- Cicirelli, V.G. (1982). Sibling influence throughout the lifespan. In M.E. Lamb & B. Sutton-Smith (Eds.), Siblings relationships: Their nature and significance across the lifespan (pp. 267-284). Hillsdale, N.J.: Lawrence Erlbaum.
- Cohen, S., & Wills, T. A. (1985). Stress, social support and the buffering hypothesis. Psychological Bulletin, 98, 310-357.
- Conger, R. D., Conger, K. J., Elder, G. H., Jr., Lorenz, F. O., Simons, R. L., & Whitbeck, L. B. (1992). A family process model of economic hardship and adjustment of early adolescent boys. Child Development, 63, 526-541.
- Cumming, E., & Schneider, D. (1961). Sibling solidarity: A property of American kinship. American Anthropologist, 61, 498-507.
- Daniels, D., Dunn, J., Furstenberg, F. F., Jr., & Plomin, R. (1985). Environmental differences within the family and adjustment differences within pairs of adolescent siblings. Child Development, 56, 764-774.
- Derogatis, L. R. (1983). SCL-90-R administration, scoring, and procedures manual-II. Towson, MD: Clinical Psychometric Research.
- Dohrnbusch, S. M., Peterson, A. C., & Hetherington, E. M. (1991). Projecting the future of research on adolescence. Journal of Research on Adolescence, 1, 7-17.
- Dunn, J. (1988). Connections between relationships: Implications of research on mothers and siblings. In R. A. Hinde & J. Stevenson-Hinde (Eds.), Relationships within families: Mutual influences (pp. 168-180). Oxford: Clarendon Press.
- Dunn, J. (1983). Sibling relationships in early childhood. Child Development, 54, 787-811.
- Dunn, J. (1989). Siblings and the development of social understanding in early childhood. In P. G. Zukow (Ed.),

Sibling interaction across cultures: Theoretical and methodological issues (pp. 106-116). New York: Springer-Verlaug.

- Dunn, J. (1992). Sisters and Brothers: Current issues in developmental research. In F. Boer & J. Dunn (Eds.), Children's sibling relationships: Developmental and clinical issues (pp. 1-18). Hillsdale, N.J.: Lawrence Erlbaum.
- Dunn, J. & Kendrick, C. (1979). Interaction between young siblings in the context of family relationships. In M. Lewis & L. A. Rosenblum (Eds.), The child and its family (pp. 143-168). New York: Plenum Press.
- Dunn, J. & Kendrick, C. (1980). The arrival of a sibling: Changes in patterns of interactions between mother and first-born child. Journal of Child Psychology and Psychiatry, 21, 119-132.
- Dunn, J. & Kendrick, C. (1981). Interactions between young siblings: Association with the interaction between mother and firstborn child. Developmental Psychology, 71, 336-343.
- Dunn, J. & Kendrick, C. (1982a). Siblings and their mothers: Developing relationships within the family. In M. E. Lamb & B. Sutton-Smith (Eds.), Sibling relationships: Their nature and significance across the lifespan (pp. 39-60). Hillsdale, NJ: Lawrence Erlbaum.
- Dunn, J., & Kendrick, C. (1982b). Siblings: Love, envy, and understanding. Cambridge, MA: Harvard University Press.
- Dunn, J., & Munn, P. (1985). Becoming a family member: Family conflict and the development of social understanding. Child Development, 56, 480-492.
- Dunn, J. & Munn, P. (1986a). Sibling quarrels and maternal intervention: Individual differences in understanding and aggression. Journal of Child Psychology and Psychiatry, 27, 583-595.
- Dunn, J., & Munn, P. (1986b). Siblings and the development of prosocial behavior. International Journal of Behavioral Development, 2, 265-284.
- Dunn, J., & Plomin, R. (1990). Separate lives: Why siblings are so different. New York: Basic Books.

- Felson, R. B., & Russo, N. (1988). Parental punishment and sibling aggression. Social Psychology Quarterly, 51, 11-18.
- Festinger, L. A. (1954). A theory of social comparison. Human Relations, 7, 117-140.
- Furman, W., & Buhrmester, D. (1985). Children's perceptions of the qualities of sibling relationships. Child Development, 56, 448-461.
- Furman, W., Jones, L., Buhrmester, D., & Adler, T. (1989). Children's, parents', and observers' perspectives on sibling relationships. In Zukow, P. G. (Ed.), Sibling interaction across cultures: Theoretical and methodological issues (pp. 165-183). New York: Springer-Verlag.
- Garmezy, N. (1983). Stressors of childhood. In N. Garmezy & M. Rutter (Eds.), Stress, coping, and development in children (pp. 43-84). New York: McGraw-Hill.
- Garmezy, N., & Rutter, M. (1985). Acute reactions to stress. In M. Rutter & L. Hersov (Eds.), Child and adolescent psychiatry: Modern approaches (2nd edition) (pp. 153-176). Oxford: Blackwell Scientific.
- Gecas, V. (1981). Contexts of socialization. In M. Rosenberg & R. H. Turner (Eds.), Social psychology: Sociological perspectives (pp. 165-199). New York: Basic Books.
- Gecas, V., & Seff, M. A. (1990). Families and adolescents: A review of the 1980s. Journal of Marriage and the Family, 52, 941-958.
- Gibbons, F. X., & Gerrard, M. (1991). Downward social comparison and coping with threat. In J. Suls & T. Wills (Eds.), Social comparison: Contemporary theory and application (pp. 317-345). Hillsdale, NJ: Lawrence Erlbaum.
- Glenn, N. D. (1990). Quantitative research on marital quality in the 1980s: A critical review. Journal of Marriage and the Family, 52, 818-831.
- Goetting, A. (1986). The developmental tasks of siblingship over the life cycle. Journal of Marriage and the Family, 48, 703-714.
- Gold, D.T. (1989). Generational solidarity: Conceptual antecedent and consequences. In V.H. Bedford & D.T. Gold

(Eds.), Siblings in later Life: A neglected family relationship (pp. 19-32). [special issue]. American Behavioral Scientist, 33(1).

- Hetherington, M. (1988). Parents, children, and siblings: Six years after divorce. In R. A. Hinde & J. Stevenson-Hinde (Eds.), Relationships within families: Mutual influences (pp. 311-331). Oxford: Clarendon Press.
- Hill, J. P. & Lynch, M. E. (1983). The intensification of gender-related role expectations during early adolescence. In J. Brooks-Gunn and A. C. Peterson (Eds.), Girls at puberty: Biological and psychological perspectives (pp. 201-228). New York: Plenum Press.
- Hoelter, J. W. (1983). The analysis of covariance structures: Goodness-of-fit indices. Sociological Methods and Research, 11, 325-344.
- Ihinger, M. (1975). The referee role and norms of equity: A contribution toward a theory of sibling conflict. Journal of Marriage and the Family, 37, 515-524.
- Irish, D. P. (1964). Sibling interaction: A neglected aspect in family life research. Social Forces, 42, 279-288.
- Jaccard, J. R. Turrisi, R., Wan, C. K. (1990). Interaction effects in multiple regression. Newbury Park, CA: Sage.
- Jöreskog, K. G., & Sörbom, D. (1989). LISREL VII: User's Reference Guide (1st ed.). Mooresville, IN: Scientific Software.
- Kahn, M. D., & Lewis, K. G. (1988). Siblings in therapy: Life span and clinical issues. New York: Norton.
- Kammeyer, K. (1967). Birth order as a research variable. Social Forces, 46, 71-80.
- Lamb, M.E. (1978). Interactions between eighteen-month-olds and their preschool-aged siblings. Child Development, 49, 51-59.
- Lamb, M. E. (1982). Sibling relationships across the lifespan: An overview and introduction. In M. E. Lamb & B. Sutton-Smith (Eds.), Sibling relationships: Their nature and significance across the lifespan, (p. 1-12). Hillsdale, NJ: Lawrence Erlbaum.

- Lamb, M.E. & Sutton-Smith, B. (1982). Sibling relationships: Their nature and significance across the lifespan. Hillsdale, NJ: Lawrence Erlbaum.
- Larson, R. & Richards, M. H. (1991). Daily companionship in late childhood and early adolescence: Changing developmental contexts. Child Development, 62, 284-300.
- Levy, D. M. (1937). Studies in sibling rivalry. Research Monograph No. 2, American Orthopsychiatric Association. Menasha, WI: George Bantz Publishing.
- Lorenz, F. O., Conger, R. D., Simons, R. L., Whitbeck, L. B., & Elder, G. H., Jr. (1991). Economic pressure and marital quality: An illustration of the method variance problem in the causal modeling of family processes. Journal of Marriage and the Family, 53, 375-388.
- Lorenz, F. O., Melby, J. N., & Skinner, M. (in press). In R. D. Conger & G. H. Elder Jr. (Eds.) (in collaboration with F. O. Lorenz, R. L. Simons, & L. B. Whitbeck). Families in a changing society: Coping with economic hardship. Hillsdale, NJ: Aldine.
- Maccoby, E. E., & Martin, J. A. (1983). Socialization in the context of the family: Parent-child interaction. In E. M. Hetherington (Eds.), P. H. Mussen (Series Ed.), Handbook of child psychology (Vol. 4): Socialization, personality, and development (pp. 1-101). New York: Wiley.
- Masten, A. S., & Garmezy, N. (1985). Risk, vulnerability, and protective factors in developmental psychopathology. In B. B. Lahey & A. E. Kazdin (Eds.), Advances in clinical child psychology (Vol. 8) (pp. 1-52). New York: Plenum.
- Melby, J., Conger, R., Book, R., Rueter, M., Lucy, L., Repinski, D., Ahrens, K., Black, D., Brown, D., Huck, S., Mutchler, L., Rogers, S., Ross, J., & Stavros, T. (1990). The Iowa interaction coding manual. Ames, IA: Iowa Youth and Families Project.
- Minnett, A. M., Vandell, D. L., & Santrock, J. W. (1983). The effects of sibling status on sibling interaction: Influence of birth order, age spacing, sex of child, and sex of sibling. Child Development, 54, 1064-1072.
- Minuchin, P. (1988). Relationships within the family: A systems perspective on development. In R. A. & J. Stevenson-Hinde (Eds.), Relationships within families: Mutual influences (pp. 7-26). Oxford: Clarendon Press.

- Munn, P. & Dunn, J. (1988). Temperament and the developing relationship between siblings. International Journal of Behavioral Development, 12, 433-451.
- Patterson, G. R. (1982). Coercive family process. Eugene, OR: Castalia.
- Patterson, G. R. (1975). Families. Champaign, IL: Research Press.
- Patterson, G. R. (1984). Siblings: Fellow travelers in coercive family processes. In R. J. Blanchard (Ed.). Advances in the study of aggression (pp. 173-214). New York: Academic Press.
- Patterson, G. R. (1986). The contribution of siblings to training for fighting: A microsocial analysis. In D. Olweus, J. Block, & M. Radke-Yarrow (Eds.), Development of antisocial and prosocial behavior: Research, theories, and issues (pp. 235-261). Orlando, FL: Academic Press.
- Patterson, G. R., Reid, J. B., & Dishion, T. J. (1992). Antisocial boys. Eugene, OR: Castalia Publishing.
- Peterson, G. W., & Rollins, B. C. (1987). Parent-child socialization. In M. B. Sussman & S. K. Steinmetz (Eds.). Handbook of Marriage and the Family (pp. 471-507). New York: Plenum Press.
- Peterson, A. C. & Taylor, B. (1980). The biological approach to adolescence: Biological change and psychological adaptation. In J. Adelson (Ed.), Handbook of adolescent psychology (pp. 117-158). New York: Wiley.
- Pfouts, J. H. (1976). The sibling relationship: A forgotten dimension. Social Work, 21, 200-204.
- Rathunde, K. & Csikszentmihalyi, M. (1991). Adolescent happiness and family interaction. In K. Pillener & K. McCartney (Eds.), Parent-child relations throughout life (pp. 143-162). Hillsdale, NJ: Lawrence Erlbaum.
- Richards, M. H., Abell, S., & Peterson, A. C. (1991). Pubertal development and the psychological well-being of adolescents. In P. Tolan & B. Cohler (Eds.), Handbook of clinical research and practice with adolescents. New York: Wiley.
- Richards, M. H., & Duckett, E. (1991). Maternal employment and adolescents. In J. V. Lerner, & N. L. Galambos (Eds.),

- Employed mothers and their children (pp.85-130). New York: Garland Publishing.
- Rohner, R. P. (1975). They love me, they love me not: A worldwide study of the effects of parental acceptance and rejection. New Haven, CT: Human Relations Area Files.
- Rohner, R. P. (1986). The warmth dimension: Foundations of parental acceptance-rejection theory. Beverly Hills, CA: Sage.
- Rollins, B. C., & Thomas, D. L. (1979). Parental support, power, and control techniques in the socialization of children. In W. R. Burr, R. Hill, F. I. Nye, & I. L. Reiss (Eds.), Contemporary theories about the family: Research-based theories (Vol. 1) (pp. 317-364). New York: The Free Press.
- Ross, H.G. & Milgram, J.I. (1982). Important variables in adult sibling relationships: A qualitative study. In M.E. Lamb & B. Sutton-Smith (Eds.), Sibling relationships: Their nature and significance across the lifespan (pp. 225-250). Hillsdale, NJ: Lawrence Erlbaum.
- Rutter, M. (1980). Changing youth in a changing society: Patterns of adolescent development and disorder. Cambridge, MA: Harvard University Press.
- Rutter, M. (1990). Psychosocial resilience and protective mechanisms. In J. Rolf, A. S. Masten, D. Cicchetti, K. H. Nuechterlein, & S. Weintraub (Eds.), Risk and protective factors in the development of psychopathology (pp. 181-214). Boston, MA: Cambridge University Press.
- Schachter, F. F., & Stone, R. K. (1987). Comparing and contrasting siblings: Defining the self. Journal of Children in Contemporary Society, 19, 55-75.
- Schachter, F. F., & Stone, R. K. (1985). Difficult sibling, easy sibling: Temperament and within-family environment. Child Development, 56, 1335-1344.
- Schachter, F. F., Shore, E., Feldman-Rotman, S, Marquis, R. E., & Campbell, S. (1976). Sibling deidentification. Developmental Psychology, 12, 418-427.
- Schvaneveldt, J. D., & Ihinger, M. (1979). Sibling relationships in the family. In W. R. Burr, R. Hill, F. I. Nye, & I. L. Reiss (Eds.), Contemporary theories about the family: Research-based theories, Vol. 1 (pp. 453-467). New York: The Free Press.

- Simmons, R. G., & Blyth, D. A. (1987). Moving into adolescence: The impact of pubertal change and school context. New York: Aldine de Gruyter.
- Simons, R. L., Beaman, J., Conger, R. D., & Chao, W. (1992). Gender differences in the intergenerational transmission of beliefs about parenting. Journal of Marriage and the Family, 54, 823-836.
- Simons, R. L., Conger, R. D., & Whitbeck, L. B. (1988). A multistage social learning model of the influences of family and peers upon adolescent substance abuse. Journal of Drug Issues, 18, 293-315.
- Simons, R. L., Whitbeck, L. B., Conger, R. D., Melby, J. N. (1990). Husband and wife differences in determinants of parenting: A social learning and exchange model of parental behavior. Journal of Marriage and the Family, 52, 375-392.
- Simons, R. L., Whitbeck, L. B., Conger, R. D., Wu, C. (1991) Intergenerational transmission of harsh parenting. Developmental Psychology, 27, 159-171.
- SPSS-X User's Guide: 3rd Edition. (1988). Chicago, IL: SPSS Inc.
- Steinberg, L. (1987). Recent research on the family at adolescence: The extent and nature of sex differences. Journal of Youth and Adolescence, 16, 191-197.
- Steinberg, L. D., & Silverberg, S. B. (1986). The vicissitudes of autonomy in early adolescence. Child Development, 57, 841-851.
- Steinmetz, S. K. (1987). Family violence: Past, present, and future. In M. B. Sussman & S. K. Steinmetz (Eds.), Handbook of marriage and the family (pp. 725-766). New York: Plenum Press.
- Stillwell, R. & Dunn, J. (1985). Continuities in sibling relationships: Patterns of aggression and friendliness. Journal of Child Psychology and Psychiatry, 26, 627-637.
- Straus, M. A., Gelles, R. J., & Steinmetz, S. K. (1980). Behind closed doors: Violence in the American family. New York: Doubleday/Anchor.

- Suen, H. K. & Ary, D. (1989). Analyzing quantitative behavioral observation data. Hillsdale, NJ: Lawrence Erlbaum.
- Sussman, M. B., & Steinmetz, S. K. (Eds.). (1987). Handbook of marriage and the family. New York: Plenum Press.
- Sutton-Smith, B. & Rosenberg, B. G. (1970). The sibling. New York: Holt, Rinehart, & Winston.
- Treffers, P.D.A. (1989). Foreward. In F. Boer & J. Dunn (Eds.), Children's sibling relationships: Developmental and clinical issues (pp. xi-xii). Hillsdale, NJ: Lawrence Erlbaum.
- Volling, B., & Belsky, J. (1992). The contributions of mother-child and father-child relationships to the quality of sibling interaction: A longitudinal study. Child Development, 63, 1209-1222.
- Wagner, M. E., Schubert, H. J. P., & Schubert, D. S. P. (1979). Sibship-constellation effects on psychosocial development, creativity, and health. In H. W. Reese & L. P. Lipsitt (Eds.), Advances in child development and behavior, Vol. 14. New York: Academic Press.
- Walster, E., Walster, G. W., & Berscheid, E. (1978). Equity: Theory and research. Boston, MA: Allyn & Bacon.
- Weisner, T. S., & Gallimore, R. (1977). My brother's keeper: Child and sibling caretaking. Current Anthropology, 18, 169-180.
- Werner, E. E. & Smith, R. S. (1982). Vulnerable but invincible: A longitudinal study of resilient children and youth. New York: McGraw-Hill.
- Werner, E. E., & Smith, R. S. (1992). Overcoming the odds: High risk children from birth to adulthood. Ithaca, NY: Cornell University Press.
- Wheaton, B. (1985). Models for the stress-buffering functions of coping resources. Journal of Health and Social Behavior, 26, 352-364.
- Whitbeck, L. B. (1987). Modeling efficacy: The effects of perceived parental efficacy on the self-efficacy of early adolescents. Journal of Early Adolescence, 7, 165-177.

Whitbeck, L. B., Simons, R. L., Conger, R. D., Lorenz, F. O., Huck, S., & Elder, G. H., Jr. (1991). Family economic hardship, parental support, and adolescent self-esteem. Social Psychology Quarterly, 54, 353-363.

Youniss, J. & Smollar, J. (1985). Adolescent relations with mothers, fathers, and friends. Chicago, IL: University of Chicago Press.

Zukow, P.G. (Ed.). (1989). Sibling interaction across cultures: Theoretical and methodological issues. New York: Springer-Verlaug.

APPENDIX A

INDICATORS OF PARENTAL HOSTILITY

A - 1. Child report of mother's hostility.

Each child independently completed a set of questions about his or her mother with the following lead-in:

Please think about a time during the past month when you and your mom have spent time talking or doing things together. With those times in mind, indicate how often your mom acted in the following ways toward you during the past month. During the past month, how often did your mom

- 1 = always
- 2 = almost always
- 3 = fairly often
- 4 = about half the time
- 5 = not too often
- 6 = almost never
- 7 = never

- 1. Get angry at you?
- 2. Shout or yell at you because she was mad at you?
- 3. Get into a fight or argument with you?
- 4. Hit, push, shove, or grab you?
- 5. Argue with you when you disagreed about something?

* Note: All items were reverse recoded so the higher the score, the higher the incidence of the behavior.

A - 2. Child report of father's hostility.

These same questions were answered by the seventh grade target child and the sibling in the study about his or her relationship with the father at a later point in the questionnaire. These questions were reverse recoded and then summed to create a measure of child report of father's hostility.

A - 3. Observer rating of parent's behavior toward child.

Trained observers rated behaviors of mother, then father, toward the seventh grader and the sibling in Task 1 and in Task 2. (Questions for each task are listed in Appendix F.) Each task was rated by an independent observer. All behaviors were rated on a scale of 1 = low evidence to 5 = high evidence of the behavior. Four specific behaviors were summed to create a parental hostility scale; these behaviors are hostility, antisocial, angry coercion, and transactional conflict. A brief definition of each follows:

a. **Hostility (HS)**: the extent to which hostile, angry, critical, disapproving, or rejecting behavior is directed toward another interactor's behavior (actions), appearance, or personal characteristics.

b. **Angry Coercion (AC)**: control attempts that include hostile, threatening, or blaming behavior.

c. **Antisocial (AN)**: demonstrations of self-centered, egocentric, acting out, and out-of-control behavior that show defiance, active resistance, insensitivity toward others, and lack of constraint. Immaturity, age-inappropriate behaviors.

d. **Transactional Conflict (TC)**: extent to which the dyad is involved in initiating and/or reciprocating hostility, coercion, or verbal/physical attacks.

APPENDIX B

INDICATORS OF HOSTILITY BETWEEN SIBLINGS

B - 1. Seventh grader's report of sibling's hostility

The seventh grade target child answered a set of questions about hostile behaviors exhibited by their sibling in the study. The questions listed below, dealing with overt hostility, were used to construct a child self-report of sibling hostility. This measure was used as one of three indicators of hostility in the sibling dyad. The questions are the same as the ones children answered about parent's hostility.

Think about times during the past month when you and your brother or sister who is in the study have spent time talking or doing things together. With those times in mind, indicate how often your brother or sister acted in the following ways toward you during the past month.

- 1 = always
- 2 = almost always
- 3 = fairly often
- 4 = about half of the time
- 5 = not too often
- 6 = almost never
- 7 = never

1. Get angry at you?
2. Shout or yell at you because he or she was mad at you?
3. Get into a fight or argument with you?
4. Hit, push, grab, or shove you?
5. Argue with you whenever you disagreed about things?

* Note: All items were reverse recoded so the higher the score, the higher the incidence of the behavior.

B - 2. Sibling Report of Seventh Grader's Hostility.

These same questions were answered by the sibling in the study about the seventh grader target child's behavior during the past month. These questions were reverse recoded, then summed and used as one of the three indicators of the latent construct, Hostility between siblings.

B - 3. Observer Report of Hostility between Siblings.

Trained observers rated behaviors of the seventh grader and the sibling toward each other in Task 1 (family discussion), in Task 2 (family problem-solving), and Task 3 (sibling dyad discussion). (Questions for each interaction task are listed in Appendix F.) Each task was rated by an independent observer. Scores from these three tasks were summed to create an overall measure of hostility across all family settings. All behaviors were rated on a scale of 1 = low evidence to 5 = high evidence of the behavior. Four behaviors were summed to create a hostility scale; these behaviors are hostility, antisocial, angry coercion, and transactional conflict. A brief definition of each follows:

a. **Hostility (HS)**: the extent to which hostile, angry, critical, disapproving, or rejecting behavior is directed toward another interactor's behavior (actions), appearance, or personal characteristics.

b. **Angry Coercion (AC)**: control attempts that include hostile, threatening, or blaming behavior.

c. **Antisocial (AN)**: demonstrations of self-centered, egocentric, acting out, and out-of-control behavior that show defiance, active resistance, insensitivity toward others, and lack of constraint. Immaturity, age-inappropriate behaviors.

d. **Transactional Conflict (TC)**: extent to which the dyad is involved in initiating and/or reciprocating hostility, coercion, or verbal/physical attacks.

APPENDIX C

INDICATORS OF WARMTH AND SUPPORT BETWEEN SIBLINGS

C - 2. Seventh Grader Report of Sibling's Warmth/support.

The seventh grade target child answered a set of questions about behaviors exhibited by their sibling who is in the study. The questions pertaining to caring and supportive behaviors were used to construct a measure of child self-report of sibling's warmth and support. The stem for this set of questions is listed below:

Think about times during the past month when you and your brother or sister who is in the study have spent time talking or doing things together. With those times in mind, indicate how often your brother or sister acted in the following ways toward you during the past month.

- 1 = always
- 2 = almost always
- 3 = fairly often
- 4 = about half of the time
- 5 = not too often
- 6 = almost never
- 7 = never

1. Ask you for your opinion about an important matter?
2. Listen carefully to your point-of-view?
3. Let you know he or she really cares about you?
4. Act loving and affectionate toward you?
5. Let you know that he or she appreciates you, your ideas or the things you do?
6. Help you do something that was important to you?
7. Have a good laugh with you about something that was funny?
8. Act supportive and understanding toward you?

* Note: All items were reverse recoded so the higher the score, the higher the incidence of the behavior.

C - 2. Sibling Report of Seventh Grader's Support.

These same questions were answered by the sibling who was in the study about the seventh grader's behavior during the past month. These questions were reverse recoded, then summed and used as one of the three indicators of the latent construct, Warmth / Support between siblings.

C - 3. Observer Report of Warmth / Support between Siblings.

Trained observers rated behaviors of the seventh grader and the sibling toward each other in Task 1 (family discussion), in Task 2 (family problem-solving), and Task 3 (sibling dyad discussion). (Questions for each interaction task are listed in Appendix F.) Each task was rated by an independent observer. Scores from these three tasks were summed to create an overall measure of warmth /support across all family settings. All behaviors were rated on a scale of 1 = low evidence to 5 = high evidence of the behavior. Five behaviors were summed to create a warmth / support scale; these behaviors are warmth, listener responsiveness, communication, prosocial, and transactional positive. A brief definition of each follows:

- a. **Warmth/Support (WM):** expressions of interest, care, concern, support, encouragement, or responsiveness toward another person.
- b. **Listener Responsiveness (LR):** nonverbal and verbal responsiveness to the verbalizations or actions of the other person that indicate attentiveness by the listener.
- c. **Communication (CO):** the speaker's ability to neutrally or positively express his/her own point of view, needs, wants, etc., in a clear, appropriate, and reasonable manner, and to demonstrate consideration of the other interactor's point of view. The good communicator promotes rather than inhibits exchange of information.
- d. **Prosocial (PR):** demonstrations of helpfulness, sensitivity toward others, cooperation, sympathy, and respectfulness toward others in an age-appropriate manner. Reflects a level of maturity appropriate to one's age.
- e. **Transactional Positive (TP):** extent to which the dyad is involved in initiating and/or reciprocating warmth, endearments, or physical affection.

APPENDIX D

INDICATORS OF ADOLESCENT EXTERNALIZED DISTRESS

D - 1. Seventh Grader Report of Antisocial Feelings and Behaviors

One set of questions in the questionnaire is adapted from the Buss-Durke (1957) Antisocial Scale which asks the respondent to answer how well each question describes what he or she would feel or do in certain situations. The seventh grader answered a set of questions as follows:

Indicate how you feel and what you do in certain situations.

- 1 = not at all
- 2 = agree
- 3 = somewhat
- 4 = a lot
- 5 = exactly

1. If someone hits me first, I let him have it.
2. When someone makes a rule I don't like, I want to break it.
3. When I get mad, I say nasty things.
4. When people yell at me, I yell back.
5. If someone annoys me, I tell him what I think of him.
6. When someone is bossy, I do the opposite of what he asks.
7. If I have to use physical violence to defend my rights, I will.

D - 2. Seventh Grader report of own Hostility.

Items from the Hostility subscale of the SCL-90-R (Derogatis, 1983) scale were divided into two subscales, a) feelings and b) behaviors. The SCL-90-R scale had the following stem question and 5-point response format:

Indicate how much discomfort that each problem has caused you during the past week including today. During the past week, how much were you distressed or bothered by ...

- 1 = not at all
- 2 = a little bit
- 3 = a moderate amount
- 4 = quite a bit
- 5 = extremely

a. Hostile feelings

- 1. Feeling easily annoyed or irritated.
- 2. Having urges to beat, injure, or harm someone.
- 3. Having urges to break or smash things.

b. Hostile behaviors

- 1. Temper outbursts you could not control.
- 2. Getting into frequent arguments.
- 3. Shouting or throwing things.

APPENDIX E

INDICATORS OF ADOLESCENT INTERNALIZED DISTRESS

E - 1. Adolescent report of depression, anxiety, and somatization.

Three subscales from the SCL-90-R (Derogatis, 1983) scale were used to assess seventh grader's internalized distress. The three are a) depressed mood, b) anxiety, and c) somatization. The SCL-90-R scale had the following stem question and 5-point response format:

Indicate how much discomfort that each problem has caused you during the past week including today. During the past week, how much were you distressed or bothered by ...

- 1 = not at all
- 2 = a little bit
- 3 = a moderate amount
- 4 = quite a bit
- 5 = extremely

a. Depressed Mood.

- 1. Feeling low in energy or slowed down.
- 2. Thoughts of ending your life.
- 3. Crying easily.
- 4. Blaming yourself for things.
- 5. Feeling lonely.
- 6. Feeling blue.
- 7. Worrying too much about things.
- 8. Feeling no interest in things.
- 9. Feeling fearful.
- 10. Feeling hopeless about the future.
- 11. Feeling everything is an effort.
- 12. Feelings of worthlessness.

b. Anxiety.

1. Nervousness or shakiness inside.
2. Trembling.
3. Suddenly scared for no reason.
4. Feeling fearful.
5. Heart pounding or racing.
6. Feeling tense or keyed up.
7. Spells of terror or panic.
8. Feeling so restless you couldn't sit still.
9. The feeling something bad is going to happen to you.
10. Thoughts and images of a frightening nature.

c. Somatization.

1. Headaches.
2. Faintness or dizziness.
3. Pains in heart or chest.
4. Pains in lower back.
5. Nausea or upset stomach.
6. Soreness of your muscles.
7. Trouble getting your breath.
8. Hot or cold spells.
9. Numbness of tingling in parts of your body.
10. Heavy feelings in you arms or legs.

APPENDIX F

FAMILY INTERACTION TASK QUESTIONS

F - 1. Task 1 Questions: General Family Discussion.

Task 1 involved all four family members and lasted 30 minutes. Family members discussed basic topics about family activities and relationships. Each question was printed on a separate card which was read out loud by the designated family member (printed on the back of the card). The questions with the designated family member listed in parentheses are printed below.

(Target)

Card 1

When do each of us see Mom and Dad during the average week day? and during the weekend?
(Please talk about the times each of you have to see one another.)

(Sibling)

Card 2

What are some of the special things each of us does with Dad? How about with Mom?
What do we each enjoy about spending time together?
(Please discuss each other's answers.)

(Target)

Card 3

How well do each of our parents think we do in our school work and other school activities?
How well do each of us think we do?
Do we usually agree with our parents about school?
(Discuss each other's answers.)

(Sibling)

Card 4

What usually happens when each of us gets into trouble or has a disagreement with Dad? with Mom?
What do we get into trouble for and what do Mom and Dad usually do?
(Give an example and talk about what happened.)

(Father)

Card 5

How much do we know about what's happening in our kids' lives
--Like who their friends are?
--How they spend their free time?
--What work they do around the house...and so on?
What do we think about these things?
(Please discuss your answers.)

(Target)

Card 6

What are some rules or things our parents expect of us?
How fair do we think these rules are?
Which of these rules would we like to change?
(Please discuss your answers.)

(Sibling)

Card 7

When we do a good job at something - like in school, work around the house, or things our parents ask us to do, what does Mom usually do or say about that? What about Dad?
(Please discuss your answers.)

(Target)

Card 8

When Mom or Dad say we will be punished or rewarded for doing something, do they always do what they say they will? Give some examples.
(Please discuss your answers.)

(Mother)

Card 9

What would we like each of you to do or be when you grow up?
What would each of you like to do or be?
Do you think you will be able to do the things you want?
Why or why not?
(Discuss your answers.)

(Father)

Card 10

What is one of the worst things that happened in each of our
lives in the past year?
What is one of the best things that happened in each of our
lives in the past year?
How did these things affect our family?
(Everyone should answer these questions. Please discuss.)

(Sibling)

Card 11

Where do each of us get our spending money and do we think
we have enough money to spend?
Do our Mom and Dad approve of the way we handle money?
(Discuss your answers.)

(Mother)

Card 12

If each of us could change anything about our family, what
would we like to change? Why?
Do we agree or disagree about this?
(Please talk about your answers.)

(Parents)

Card 13

If there is still time left, go back and review each card.
What would you like to add to or change about your earlier
answers?

We would like you to discuss the earlier questions or
anything you would like to talk about until the interviewer
returns.

F - 2. Task 2 Questions: Family Problem Solving.

Task 2 involved all four family members and lasted 15 minutes. Family members discussed a series of questions designed to promote possible solutions to an actual family problem such as chores or allowances. Problem topics for each family were chosen by the interviewer based on a short family problems questionnaire completed by all family members prior to the videotaping of Task 1 (see Appendix G).

Please select a specific issue regarding _____
that causes conflict or leads to disagreements.

Discuss together:

1. What is it about _____ that causes conflict or disagreements?
2. When does this issue come up and what usually happens?
3. Discuss how you might resolve this conflict or disagreement in the future. Please try to agree on a single solution.

If you are satisfied that you have done all you can to solve this conflict, continue in the same manner with the next topic of disagreement.

If you have finished discussing the selected areas of disagreement, please choose another specific area of conflict to discuss in the same manner.

F - 3. Task 3 Questions: Sibling Interaction Task.

Task 3 involved the two children who were in the study; i.e., a seventh grader and one sibling. The task lasted 15 minutes and consisted of questions designed to elicit discussion about the sibling relationship and about each child's individual activities and friends. During this task, each parent completed a questionnaire located so they could not overhear the children's conversation..

Card 1

What would you like to add or change about what was said in our earlier talks with Mom and Dad?
(Please discuss your answers.)

Card 2

What are some of the things the two of us like to do together?
Talk about a time in the past few weeks when we did something fun together.
(Please discuss your answers.)

Card 3

What are some of the things the two of us argue or disagree about?
Talk about a time in the past few weeks when we argued or disagreed about something. What did we do about it?
How do we usually handle our arguments?
(Please discuss your answers.)

Card 4

In what ways do our Mom and Dad treat each of us differently?
Give some examples.
Do we think this is fair or unfair? Why?
(Please discuss your answers.)

Card 5

Who does each of us find it easier to talk to, Mom or Dad?
Why does each of us feel this way?
(Talk about your answers.)

Card 6

How much do Mom and Dad really know about what's going on in each of our lives?
Do we wish they knew more or less?
(Please explain.)

Card 7

What are our friends like?
What sorts of things do they enjoy doing?
What do we like about them?
What do we like to do with our friends?
(Please talk about your answers.)

Card 8

How do we think our family is different or the same as our friends' families?
Please give some examples.
(Discuss your answers.)

Card 9

Where would each of us like to live when we leave home and are on our own?
Do we think we'll stay in Iowa?
Why or why not?
(Please discuss your answers.)

Card 10

We talked with our parents about what we would like to be or do when we're on our own. Is there anything else each of us would like to say about that?
What kind of work or career does each of us know we don't want to do?
(Please discuss your answers.)

Card 11

What is a school day like for each of us? What classes do we have each period?
What does each of us like and dislike most about going to school? Why?

Card 12

What are some of the things each of us admires or likes about the other?

Why do we feel this way?

(Talk about your answers.)

Card 13

When our family has a problem how do we usually solve it?

Do we all talk about it or does one or both of our parents settle it?

(Please discuss your answers.)

Card 14

If there is still time left, go back and review each card. What would you like to add to or change about your earlier answers?

We would like you to keep talking together about whatever you like until the interviewer returns.

F - 4. Task 4 Questions: Marital Interaction Task.

Task 4 involved just the husband and wife and lasted 35 minutes. Questions were designed to promote discussion about various issues related to the marital relationship including its positive and negative points. During this task, each child completed a questionnaire located so they could not overhear their parents' conversation.

Card 1

How long have we been married?
Where did we meet?
What are some of the things we first liked about each other and enjoyed doing together?
(Talk about your answers.)

Card 2

Thinking about today, what do we find most enjoyable, pleasant, or rewarding about our life together?
Do we each find the same things or different things enjoyable in our marriage?
(Please discuss your answers.)

Card 3

How does each of us feel about the amount and quality of time we have to spend together as a couple?
How do our daily schedules affect our time together and our marriage?
How has this changed since we were first married?
(Please explain and discuss your answers.)

Card 4

What do we disagree about most?
How do we usually handle disagreements when they arise?
What was one of our last real disagreements and how did we handle it?
Did we resolve the problem? How?
(Please discuss your answers.)

Card 5

In what ways do we agree or disagree about how to raise our children?

How do we handle disagreements about raising children?

What does each of us say or do?

(Please discuss your answers.)

Card 6

In what ways do we agree or disagree about how we earn, spend, or handle our money?

How do we handle our disagreements about money?

What does each of us say or do?

(Please discuss your answers.)

Card 7

What have been some important changes in recent years in our marriage? In our family?

Which of these changes have been for the better? The worse?

(Please explain and discuss your answers.)

Card 8

What would each of us say was the most difficult or traumatic experience we have had since we were married?

Why was this so difficult?

When did it happen, how did we handle it, and does this still influence us today?

(Please discuss.)

Card 9

What would each of us say was the most positive or special experience we have had since we were married?

Why was this so positive?

When did it happen and do we still think or talk about it?

(Please discuss.)

Card 10

If each of us could change anything about our present circumstances, we would each like to...

(Please explain and discuss your answers.)

Card 11

What would each of us like to accomplish in the next few years?

Do we each want to accomplish the same things or different things?

(Please discuss your answers.)

Card 12

If there is still time left, go back and review each card. What would you like to add to or change about your earlier answers?

We would like you to continue discussing anything you want to until the interviewer returns.

APPENDIX G

FAMILY PROBLEMS QUESTIONNAIRE

Each family member responded to the items listed below as possible sources of disagreement. All four family member questionnaires were compared by the video interviewer, while the family was engaged in the first interaction task, to chose the most salient topics of conflict within that particular family. These topics were then given to the family for the problem solving discussion in task 2.

The stem question for parents was as follows:

Indicate how often you and your children in the study disagree or get upset about the following topics.

The stem question for children was as follows:

Indicate how often you and your parents disagree or get upset about the following topics.

The response format was the same for all respondents:

- 0 = never
- 1 = hardly ever
- 2 = only sometimes
- 3 = quite often
- 4 = all the time
- 9 = don't know

1. Money.
2. School grades / homework
3. Choice of friends.
4. How child spends free time.
5. Curfews.
6. Chores at home.
7. School activities.
8. Family time together.
9. Alcohol.
10. Drugs.
11. Tobacco.
12. Clothes.
13. Movies/TV.
14. Church.
15. Fighting between brothers and sisters.
16. Dating.
17. Outside jobs.
18. Attitudes/respect.
19. Discipline.

- 20. Transportation to places/ use of family car.
- 21. Other topics.

Other topics included: church activities, stay overnight, eating, talking on the phone, swearing, bedtime, cleaning, room, picking up after themselves (kids), shopping, furniture, appearance.